

Alliance to Save Energy

Submitter's Name/Affiliation: Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy

Contact: 1200 18th Street, NW, Ste 900, Washington, DC 20036

Email: kcallahan@ase.org

Phone: 202/530-2219

Executive Summary

The Alliance to Save Energy applauds the Committee on Energy and Natural Resources for its bi-partisan effort to explore development of a *mandatory* market-based greenhouse gas regulatory system in the U.S.. We appreciate the opportunity to provide input, which for the Alliance will center on mechanisms and policies to deploy energy efficiency as the quickest, cleanest, and cheapest means of reducing America's greenhouse gas emissions. We urge the Committee to take full advantage of the cost-effective benefits provided by the energy efficiency policies and measures, outlined in our responses to questions one and two. Development and implementation of a national regulatory system likely will require protracted debate and consideration. While this national dialogue ensues, the Alliance urges Congress also to enact policies and programs that advance energy efficiency which will make measurable progress toward the Committee's stated goal of lowering greenhouse gas emissions in the U.S.

The Alliance to Save Energy is a non-governmental organization dedicated to advancing energy efficiency worldwide. Formed as a bipartisan initiative between Senators Charles H. Percy and Hubert H. Humphrey in the wake of the OPEC oil embargo, the Alliance mission attracts leaders in the energy and environmental fields. The current Board of Directors offers valuable leadership and insight into our efforts to incorporate energy efficiency into climate change proposals at the federal, regional and state levels. Board members include sitting Members of the U.S. Congress, principals of leading businesses, consumer and environmental organizations, as well as key state policy makers from two of the states with comprehensive climate change initiatives - New York and California. The Alliance also enjoys support by more than 100 Associate members including Fortune 500 companies, trade associations, public interest groups and small businesses.

Should Congress adopt a so-called "cap and trade" program, the Alliance believes that an upstream, economy-wide approach with a significant allocation for energy efficiency is ideal, however, we recognize that Congress may choose to focus downstream on a single sector. Under either scenario, the Alliance warns against relying on the price of energy to drive efficiency, but rather recommends that Congress create specific mechanisms (through allowance allocation or auction) and policies to ensure market penetration of energy-efficient technologies. The Alliance maintains that the cost of regulation can be mitigated through energy-efficiency standards and incentives and the out-put based allocation of allowances.

The Alliance's responses to the Committee include recommendations to:

- create an allocation (set-aside) or auction of allowances that can be sold to fund energy efficiency programs and other public benefits; and,
- enact complementary energy-efficiency policy measures, in addition to any cap and trade program, that will help to reduce the costs and improve the standards of energy use.

The Alliance urges Congress to use the largely-untapped potential of energy efficiency to mitigate U.S. greenhouse gas emissions, strengthen the economy, enhance national security, and help slow climate change.

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Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

The Alliance to Save Energy asserts that energy efficiency is a key method for reducing the costs of a cap-and-trade program. Energy-efficiency measures save money in energy bills and reduce the overall cost of greenhouse gas regulation rather than merely shifting the costs between sectors. Particularly if the point of regulation is upstream, the establishment of an allocation of allowances, or proceeds from the auction of allowances, to “public goods” including energy efficiency is essential to insuring that this resource is used fully as a cost-effective mechanism for attaining required reductions, advancing innovative new technologies and insulating consumers from increased energy bills.

Auctioning the credits would send the right price signals through the economy and encourage a reduction in carbon emissions through investment in advanced, efficient technologies. However, a well-designed allocation of credits could mitigate the costs to some parties.¹ In either case, the Alliance recommends that at least a portion of the allowances, or the proceeds of an auction, be allocated for “public goods” including energy-efficiency. The Alliance also recommends that parallel policies be put in place to ensure energy savings. (*The programs are detailed in the clarifying questions*).

Allocating a portion of the allowances to “public goods” will produce revenues to fund energy efficiency and other programs that will assist consumers and businesses who are outside the trading system to mitigate their energy use. It also will reduce the cost of the allowances by directly supporting cost-effective greenhouse gas reduction measures. If the allowances are auctioned, the auction proceeds may be used for this purpose. If the allowances are given away, the allowances may be allocated directly for public goods, such as energy efficiency. Public benefits programs could directly mitigate the costs to consumers of the regulation, as well as the costs of current high energy prices, while simultaneously lowering the costs through energy efficiency.

This follows a model that has been widely adopted in the electricity sector. Over the last two decades, states and regulated utilities used demand-side management (DSM) programs to avoid the need for and cost of about one hundred 300-Megawatt (MW) power plants². However, utility spending on DSM programs nationwide was cut almost in half as the electricity industry was partially deregulated in the late 1990's. Since then twenty-four states and the District of Columbia have created a dedicated stream of funds, usually through a small surcharge on

¹ On the other hand, if companies are given credits based on historical emissions, and their products are priced at the marginal cost, which includes the cost of needed emissions credits, then they will effectively be paid for credits that were given to them, and therefore could receive a large windfall.

² Based on reported peak load reductions in Energy Information Administration, Electric Power Annual 2004, Table 9.2

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electricity bills (“wires charge”), for projects to increase energy efficiency, renewable energy, low-income energy assistance, and energy research and development. State PBFs spend roughly \$1 billion each year just on energy-efficiency projects, but could spend far more effectively should resources be made available. Allowances could provide an important revenue stream for these or similar public benefit programs.

Should Congress choose to allocate allowances to the power sector, the Alliance recommends that these allowances be allocated based on electricity output. Output-based allocation regulates emissions based on the output of electricity rather than the heat or fuel input as has been done historically. An output-based approach rewards pollution prevention through a reduction in fuel consumption as well as through smokestack measures, thereby providing incentives for generation efficiency and clean energy technologies. The EPA report, “Economic Analysis of Alternate Methods of Allocating NO_x Emission Allowances,” concludes that an allocation system based on fuel input results in higher fuel use and higher emissions levels than would an output-based system.³ Output-based allowance allocation also lowers compliance costs by allowing more flexibility in meeting the emissions limits, and it may drive economic development and job creation in clean energy technology industries.

The Alliance also recommends consideration of providing allowances based on electricity savings due to utility and other end-use energy-efficiency programs as well as based on actual electricity output (“negawatt hours” as well as “megawatt hours”). As described above, the cheapest way to cut greenhouse gas emissions is generally to reduce energy use, and these programs have proven an effective means of reducing power use. Including efficiency program electricity savings in an allocation based on output would be an alternative and complementary approach to a set-aside of allowances for energy efficiency.

The effectiveness of any program will be enhanced by a defined focus on ensuring energy efficiency is provided sufficient incentives within the cap-and-trade program. Using ICF Consulting's Integrated Planning Model (IPM), the American Council for an Energy-Efficient Economy concluded that if the northeastern states participating in the Regional Greenhouse Gas Initiative (RGGI) doubled their current funding for energy-efficiency programs, it would produce the lowest emissions, carbon allowance prices, energy prices, and consumer energy bills of any policy scenario in their modeling.⁴

³ <http://www.epa.gov/airmarkets/fednox/alloc-rprt.pdf>

⁴ Draft Report: “Energy Efficiency's Role in a Carbon Cap-and-Trade System: Modeling Results from the Regional Greenhouse Gas Initiative,” Prindle, et. al, American Council for an Energy-Efficient Economy.

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Clarifying Questions 2a:

Technology R&D and Incentives

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

Level of resources and set-aside of funding for energy efficiency.

It is difficult to set an optimal level of resources to devote toward stimulating technology innovations, as the evidence suggests vastly increased investment in energy efficiency would be cost-effective. Indeed the modeling for RGGI cited above implies that **the U.S. would be best situated for meeting a strong emissions target quickly and cost-effectively if all of the allocations were directed toward energy efficiency and technology innovation.** Energy efficiency is the quickest, cleanest, and cheapest route to reducing our greenhouse gas emissions. Investment in energy efficiency will not only help reduce greenhouse gas emissions, it will help mitigate costs. In short, **a cap-and-trade program will not be as successful without clear efficiency gains.**

The Alliance to Save Energy estimates that energy-efficiency improvements since 1973 are currently saving 43 Quads of energy annually, which means that U.S. emissions are approximately three billion metric tons of carbon lower as a result of efficiency actions. However, since a full allocation for efficiency is not likely, the Alliance recommends a substantial portion of the cap-and-trade allowances (or funds derived from auction) be allocated for energy-efficiency programs through a federal public benefits fund or other institution established to fund these projects nationally. In setting up such a program, special attention and consideration should be made to states that already have public benefits funds and programs to advance energy efficiency. For example, as of 2003, the New York Energy \$mart efficiency programs had documented emissions reductions of 950 tons of nitrogen oxides (NO_x), 1700 tons

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of sulfur dioxide (SO₂), and 750,000 tons of carbon dioxide (CO₂) annually.⁵ These types of efficiency programs should be reviewed, and states should be encouraged to expand and replicate successful programs.

An example of the establishment of an energy-efficiency set aside in a greenhouse gas cap-and-trade system can be found in the Regional Greenhouse Gas Initiative (RGGI). In April 2003, New York Governor George Pataki invited the governors of the Northeast to participate in the design of a mandatory cap-and-trade program to reduce greenhouse gases and to slow climate change. On December 20th, 2005, seven states (CT, DE, ME, NH, NJ, NY, VT) announced an agreement to implement RGGI. This agreement requires a 10 percent reduction of current power plant emissions of carbon dioxide by 2019. An important aspect of RGGI is that the Memorandum of Understanding⁶ between the states includes an agreement by the Signatory States that *at least 25% of the allowances will be allocated for a "consumer benefit of strategic energy purpose."* This percentage allowance, though small relative to the emissions reduction needs, ensures that there is a portion of the emissions budget focused on advancing energy efficiency. The flexibility offered to the states to go above a 25% allocation, as well as to determine the use of these public benefits resources, is important given the diversity within the region to allow each state's program choice to maximize benefits in that state. Ensuring there are efficiency improvements is important to minimizing any price increases related to the program faced by consumers and businesses.

Other mechanisms and parallel policies to assist energy efficiency and technology deployment.

While apportioning a financial or emissions budget for energy efficiency is an important tool in achieving greenhouse gas reductions, other mechanisms, including policies implemented before and/or at the same time as a cap-and-trade program, will complement and advance the goals of pollution reduction. Several such parallel policies are outlined here.

1. Establishment of a National Public Benefits Fund. State public benefit funds (PBFs) were described above. A federal public benefits fund could match these state funds through a national wires charge as well as through an allocation of emissions allowances. A federal PBF would double resources available to those states that already have in place such a program and would encourage more states to create public benefits programs. Each tenth of a cent per kilowatt hour (mill/kWh) charge would provide \$3.7 billion a year, and would add less than one dollar to the average residential monthly electric bill. According to the American Council for an Energy-Efficient Economy (ACEEE), a federal electricity PBF would by 2020:

- Save 440 billion kWh a year;
- Reduce peak electricity demand by 160,000 MW (equivalent to about 500 power plants);
- Save consumers \$68 billion (net after investments); and,
- Prevent greenhouse gas emissions equivalent to 96 million metric tons of carbon each year.

⁵ Prindle 2005. "Cleaner Air through Energy Efficiency: Analysis and Recommendations For Multi Pollutant Cap-and-Trade Policies." American Council for an Energy-Efficient Economy: Report No. U043.

⁶ http://www.rggi.org/docs/mou_12_20_05.pdf

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2. Imposition of an Energy Efficiency Resource Standard (EERS). EERS is a performance and market-based mechanism to promote cost-effective energy-efficiency improvements. For example, Texas requires utilities to meet 10% of the expected increase in electric peak demand through efficiency programs. Other states, such as Pennsylvania and Nevada, are including energy efficiency along with renewable energy as options in broader resource standards.

Utilities can meet an EERS through the kinds of effective demand reduction programs that have been conducted in many states for years, such as appliance rebate programs, energy audits, and consumer education campaigns. The program savings are independently verified, and “efficiency credits” trading allows the savings to be achieved at the least cost.

A national EERS could require utilities to take action to reduce total electricity and natural gas use by their customers by 1% each year (compared to a no-action baseline). The Alliance to Save Energy estimates that if an EERS were implemented in 40 additional average states (i.e., obtained 0.75% of total electric demand through energy efficiency each year, phased in 2008-2010):

- annual energy use in 2020 would be reduced by 3.6 quads; and,
- annual CO₂ would be reduced by 217 million metric tons.

The same EERS applied to gas utilities would reduce annual energy use by an additional 1.5 Quads and annual CO₂ by an additional 89 million metric tons.

3. Building Codes and Appliance Standards. Standards and incentives for energy efficiency in buildings are cost-effective tools for reducing greenhouse gas emissions. Implementing appliance efficiency standards and building energy codes (or encouraging states to implement codes through code adoption programs and education), and providing consumer and home builder tax credits for improving the energy efficiency of new and existing homes, can have a significant and positive impact. A study by the Harvard School of Public Health⁷ confirms that improving the energy efficiency of existing homes reduces greenhouse gases, saves energy and has a positive impact on public health. Just insulating the 45 million homes that are under-insulated to levels required by the 2000 International Energy Conservation Code (IECC) would:

- Save 76 supertankers of crude oil or 800 billion cubic feet of natural gas per year;
- Reduce total GHG emissions by 62 million metric tons per year;
- Reduce NO_x by 100,000 tons per year; and,
- Reduce SO₂ by 190,000 tons per year.

⁷ Jonathan Levy et al. *The public health benefits of insulation retrofits in existing houses in the United States*. April 2003. Greenhouse gas data based on a preliminary study by the same author.

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4. **Increased Vehicle Fuel Economy.** Addressing greenhouse gas emissions from vehicles through direct policy measures to increase vehicle efficiency, whether by increasing or reforming Corporate Average Fuel Economy standards or by implementing a feebate program as mentioned earlier, will go a long way to addressing greenhouse gas emissions.

5. **Consumer and Business Tax Incentives.** The Energy Policy Act of 2005 provides federal tax incentives to encourage American businesses and homeowners to invest in energy efficiency in residences and commercial buildings and efficient vehicles. In addition, the Act provides incentives to encourage manufacturers to produce more efficient appliances. Tax incentives are an effective and proven method for transforming the market to prefer energy-efficiency products. However, the current limitations on the availability and size of the incentives will limit their effectiveness. Extending and expanding these credits would help to better insure that the market prefers energy-efficient products and systems.

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Clarifying Questions 2c:

Consumer Protections

- What portion of the overall allocation pool should be reserved to assist consumers?
- Should funds from the sale of permits or allowances be targeted primarily to low-income consumers, or should they be more widely distributed to benefit all consumers?

Allocations for energy efficiency will benefit all consumers, both through direct assistance to consumers in reducing their energy bills and by reducing the overall costs of the greenhouse gas emissions reductions. In addition, the more significant the portion of allocations directed to assist end-use consumers in improving energy efficiency, the lower the costs for emitters earlier in the emissions chain (as much of the required emissions reductions will already have been achieved).

The Committee White Paper suggests allocating funds to the Low Income Home Energy Assistance Program (LIHEAP) to help low income families pay for any increases in their energy bills. The Alliance to Save Energy recommends not focusing on LIHEAP funding but on low-income weatherization assistance. The more funding that is placed toward weatherizing the homes of low-income families, the less these families will feel any price increases. The Weatherization Assistance Program enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. On average, weatherization reduces heating bills by 31% and overall energy bills by \$274 per year. In the last 27 years, the U.S. Department of Energy's (DOE) Weatherization Assistance Program has provided weatherization services to more than 5.3 million low-income families.⁸ This could be greatly increased with additional funds.

Consumer benefit funding also should be directed toward broad education and incentive programs on energy efficiency. In 2001, when California experienced an energy crisis, an aggressive public education and incentive campaign reduced electricity use by 7% in just one year, and thus helped avoid further shortages. Public knowledge is the best tool at our disposal. By educating the public on how to take action to mitigate their energy use and in turn their energy bills, or take advantage of federal tax credits or rebate programs, a broad public education campaign can help dramatically reduce energy and greenhouse gas emissions and should be a cornerstone of a set of public benefits programs developed out of an allocation or auction of such credits.

⁸ <http://www.eere.energy.gov/weatherization/>

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Submitter's Name/Affiliation: **Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy**

Clarifying Questions 2d:

Set-Aside Programs

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

Set Asides for Energy Efficiency

As noted consistently in these responses, the Alliance supports a public benefits set-aside program that includes energy efficiency (*detailed above*).

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Submitter's Name/Affiliation: **Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy**

Clarifying Questions 2f:

Allocations for downstream electric generators?

- Should electricity generators be included in the allocation if they are not regulated?
(Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)
- What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?
- Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?
- How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?

If the decision is to include electricity generators in an allocation, then the allocation should be output-based, rather than heat based. This approach rewards pollution prevention achieved through a reduction in fuel consumption (and does not reward increased fuel consumption), while remaining fuel-neutral (*as noted in the primary answer to question 2*).

Question 1. Point of Regulation

Submitter's Name/Affiliation: **Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy**

Who is regulated and where?

Should Congress choose to develop a mandatory greenhouse gas regulatory system, the Alliance to Save Energy recommends an economy-wide approach as the fairest and most comprehensive means to reduce greenhouse gas emissions. Additionally, an upstream point of regulation is the most efficient and perhaps the only way to ensure that all life-cycle emissions are included. However, such a comprehensive approach might prove untenable and, at a minimum, likely will result in protracted debate. The Alliance believes that progress toward reducing greenhouse gases must begin at the earliest possible time; therefore, policies and actions directed at specific economic sectors and, importantly, at advancing energy efficiency within such sectors, also warrant consideration. Whether a program is established across all sectors or focused on but one, it is most important to include direct and substantial incentives for investment in energy efficiency through allocation of emissions credits for energy efficiency and/or through parallel policies such as consumer tax incentives, a public benefits fund and/or an energy-efficiency resource standard.

While an upstream approach is supported by many for sending price signals from the point of source throughout the economy, the Alliance urges Congress not to use price signals as the exclusive means for promoting clean energy technologies. Extensive experience with energy-efficiency programs has demonstrated that individuals and businesses are not taking full advantage of available, cost-effective measures for saving energy. Price signals, while important incentives for consumers, are a blunt instrument and do not work efficiently when there are market distortions. Examples of these distortions include the landlord-tenant and builder-homeowner split incentive,¹ as often the landlord or builder buys energy-consuming equipment but tenants and homeowners pay the energy bills. As a result, though the inefficient home's utility bills increase, the tenant, home-builder, and landlord have no incentive to make the energy efficiency improvements. In addition, consumers simply do not often respond to price signals by making cost-effective energy-efficiency investments. Consequently, a policy based solely on price signals may be needlessly expensive.

A clear way to alleviate this concern is through a direct credit allocation that is specifically targeted for energy-efficiency programs (efficiency rebate, tax incentive, and consumer education programs) through a public benefits funding mechanism. An additional approach is through parallel policies such as an energy-efficiency resource standard that requires a portion of any anticipated increase in energy use to be met through energy efficiency/reduced demand, appliance efficiency standards, building energy codes, business and consumer federal tax incentives for efficiency upgrades and equipment, and vehicle fuel economy standards. These approaches have been shown to be cost-effective ways to overcome market barriers and reduce greenhouse gas emissions.

¹ There are more than 33 million rented housing units in the United States. U.S. Census Bureau, Housing and Household Economic Statistics Division: <http://www.census.gov/hhes/www/housing.html>.

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Submitter's Name/Affiliation: **Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy**

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

An economy-wide approach is the fairest means of addressing greenhouse gas emissions as it will ensure that all emitters are incorporated into the regulatory framework. By not letting any emitters “off the hook,” an economy-wide approach provides additional trading partners and off-set potential in a cap-and-trade program.

However, addressing emissions economy-wide likely will be a cumbersome and contentious undertaking, resulting in a protracted debate – at a minimum – and possible delay in making progress toward meaningful reductions of greenhouse gas emissions. Policymakers may determine that the simplest and most politically palatable way to begin to tackle the greenhouse gas problem is to address one sector at a time, determining in each instance how best and most cost-effectively to achieve carbon reductions. An achievable system may be preferred over an ideal system. This was the determination by many of the Governors of the northeastern states who are participating in the Northeast Regional Greenhouse Gas Initiative (RGGI), which currently focuses solely on capping emissions in the power sector. *(Additional information on RGGI and support for addressing energy efficiency and consumer protections separately is addressed in Question 2).*

The obvious down side to the RGGI approach is that limiting the program to only the electric sector forgoes the ability to capture emissions reductions from other important sectors, most notably the transportation sector. A program that fails to address the transportation sector misses an imperative and meaningful opportunity to lower America's greenhouse gas emissions. There are more than 200 million cars and trucks on America's roads, with nearly 6 million more being added each year.² In 2004 alone, cars and light-duty trucks accounted for approximately 1130 million metric tons of CO₂ equivalent emissions.

To omit this sector entirely from carbon reduction policies makes no sense if the goal is to maximize reductions of greenhouse gas emissions. However, this sector might be best addressed through parallel policies including, but not limited to: increasing or reforming the corporate average fuel economy (CAFE) standard, or instituting a revenue-neutral “feebate” system, which would impose a fee on so-called “gas guzzling” vehicles which would be used to fund a rebate to “gas sipping” vehicles. There also are many possible ways to incorporate transportation emissions into a cap-and-trade system by capping the greenhouse gas emissions from the vehicles. One idea, as illustrated in a report issued by the Pew Center on Global Climate Change, is to replace the current CAFE standard program with corporate

² U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2004*, Washington, DC: forthcoming, tables MV-1 and MV-9. Table 5-1: Motor-Vehicle Registrations: 2004 and 2005. http://www.bts.gov/publications/state_transportation_profiles/state_transportation_statistics_2005/html/table_05_01.html

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average CO₂ emissions standards (in terms of average CO₂ emissions per mile).³

Manufacturers would thus earn allowances based on the reductions in projected lifetime emissions from the vehicles produced each year. While the Alliance has not completed our study of this model, we bring it to the Committee's attention to illustrate that there are methods that should be explored for incorporating transportation into the cap-and-trade system.

³ "Agenda for Climate Action", Pew Center on Global Climate Change, February 2006

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Submitter's Name/Affiliation: **Kateri Callahan and Kara Saul Rinaldi, Alliance to Save Energy**

Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

Administrative simplicity would lend itself, generally speaking, to an upstream approach. However, there are differences in the various sectors of the economy that must be considered when establishing the most cost-effective, easily administered program. For example, it may prove most attractive in the transportation sector to regulate vehicle greenhouse gas tailpipe emissions as opposed to imposition of a carbon tax on petroleum or gasoline. Of particular note, providing incentives for energy efficiency under any scheme will help to insure the cost-effectiveness of the scheme.

Also, in seeking to lower greenhouse gas emissions in a manner that is as least disruptive to the market place as possible, the Alliance encourages the Congress to consider supplementing any mandatory market-based greenhouse gas regulatory system with additional policies that will advance energy efficiency in the various economic sectors. In particular, we urge Congress to consider extension and expansion of existing consumer and business energy efficiency tax credits; creation of a national public benefits fund and/or an energy efficiency resource standard; and/or development of stronger building codes and appliance standards.

Clean Energy Group

Submitter's Name/Affiliation: Michael J. Bradley, Executive Director, The Clean Energy Group's Clean Air Policy Initiative
Contact: Michael J. Bradley
Email: mbradley@mjbradley.com
Phone: 978-369-5533

Founded in 1997, The Clean Energy Group is a coalition of electric generating and electric distribution companies that share a commitment to responsible environmental stewardship. Several of the Clean Energy Group companies participate in the Clean Air Policy Initiative, which supports the adoption of national multi-pollutant power plant legislation. The participants in the initiative include Calpine Corporation, Entergy Corporation, Exelon Corporation, Florida Power & Light Company, PG&E Corporation, and Public Service Enterprise Group. Our comments were prepared in consultation with these six companies.

In response to the white paper, we have addressed Question 1, including clarifying questions 1a and 1b, and Question 2, including clarifying questions 2d and 2f.

The members of the Clean Energy Group's Clean Air Policy Initiative support the adoption of a cap-and-trade program for the electric generating sector as a prudent first step in addressing U.S. greenhouse gas emissions assuming a fair and cost-effective program design. We agree that an economy-wide regulatory system would be effective in controlling greenhouse gas emissions; however, it remains unclear whether Congress would support the adoption of such a sweeping program. We believe that a sector-specific cap-and-trade program (with offsets) could serve to demonstrate the merits and viability of a broader economy-wide approach. An electric industry cap-and-trade program with offsets would allow reductions to occur throughout the economy, reducing the overall costs of compliance and spurring innovation. Taking such action would be a prudent first step in light of the long-term capital planning decisions that are being made by electric generating companies today. We would encourage House and Senate members to consider options for designing an economy-wide approach, while continuing to advocate the adoption of a sector-specific cap-and-trade program. A single sector approach could be readily integrated into a broader economy-wide program, and ultimately an economy wide approach will be necessary to stem the rise in greenhouse gas emissions.

In terms of distributing allowances, we advocate an updating output based allocation approach as the most equitable and most rationale basis for apportioning emissions allowances to the electric generating sector because it encourages efficiency and innovation. An updating output based allocation encourages the development of new, innovative technologies by providing a mechanism for new power projects to be integrated into the cap-and-trade program on an equal footing. Also, by calculating the number of allowances that a company receives based on its output or electricity production, it has a financial incentive to improve the operating efficiency of its fleet. This approach is in contrast to a fixed, grandfathering approach in which companies receive a constant stream of allowances without regard to their operating efficiency, and new power projects are forced to purchase their allowances from the market. In the absence of an equitable distribution of allowances, such as an output based allocation, we would support an alternative allocation approach, such as an auction, to ensure a fair distribution of the burden under a national greenhouse gas program.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Who is regulated and where?

The members of the Clean Energy Group's Clean Air Policy Initiative support the adoption of a cap-and-trade program for the electric generating sector as a prudent first step in addressing U.S. greenhouse gas emissions assuming a fair and cost-effective program design.

We agree that an economy-wide regulatory system would be effective in controlling greenhouse gas emissions; however, it remains unclear whether Congress would support the adoption of an economy-wide approach.

Therefore, we continue to advocate an electric generating sector-specific approach. We would also encourage other industry sectors to come forward with sector-specific commitments to build momentum for an economy-wide approach with the ultimate objective of combining these programs into a single coherent regulatory program. In the long-run, we would not want to see the electric generating sector face a disproportionate burden in terms of reducing its carbon emissions with other segments of the economy contributing no emissions reductions.

A comprehensive regulatory approach, whether an economy-wide cap-and-trade program or an electric industry cap-and-trade program with offsets, can dramatically reduce the costs of compliance, allowing greater reductions in emissions for the same level of investment, while spurring innovation. The economic advantages of a comprehensive regulatory approach are highlighted by the marginal cost-curves compiled by the U.S. Environmental Protection Agency (EPA).¹ (A marginal cost curve represents the level of greenhouse gas emissions abatement available at a given price by sector or project category.)

Table 1 reports the quantity of emissions reductions that EPA predicts would be available in 2010 by category at an allowance price of about \$2.50 per ton of CO₂ (this is equivalent to \$10

¹ U.S. EPA, Technical Support Document for EPA's Multi-Pollutant Analysis, September 2005.
<http://www.epa.gov/airmarkets/mp/pssupport/OffsetMethodology.pdf>.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

per metric ton of carbon).² (Also, see Figure 1 included in the file entitled *Additions_CleanEnergyGroupCleanAirPolicyInitiative.doc* for a summary of available reduction opportunities.) As indicated by the data, no single reduction category dominates, suggesting that allowing a broad range of reduction opportunities can significantly reduce the overall costs of compliance.

Table 1. GHG Emission Reduction Opportunities at \$2.50 per ton of CO₂

Source category	Reduction opportunities available at a price of \$2.50 per ton of CO ₂ (million metric tons carbon equivalent)	Percent
Reduced fossil fuel use in the U.S.	26.49	23%
Domestic methane reductions	20.19	18%
Domestic nitric and adipic acid reductions	7.09	6%
Domestic high global warming potential greenhouse gas reductions	6.67	6%
Domestic forest and agricultural sequestration	53.84	47%

According to a separate MIT analysis, inclusion of non-CO₂ abatement options in a greenhouse gas reduction program would reduce by two-thirds the costs associated with stabilizing U.S. greenhouse gas emission at 2000 levels by 2010.³ We can capitalize on this range of opportunities with an electric industry cap-and-trade program with offsets.

In addition, many of the offset projects that are available for reducing greenhouse gas emissions result in benefits beyond simply reducing emissions. These co-benefits include soil

² According to DOE this price is equivalent to adding only two-tenths of a cent per kilowatt-hour to the cost of electricity (typical electricity rates range from 4 cents to 12 cents per kilowatt-hour).

³ Pew Center on Global Climate Change, Multi-Gas Contributors to Global Climate Change: Climate Impacts and Mitigation Costs of Non-CO₂ Gases, February 2003.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

conservation, diversifying the revenue base of agricultural operations, energy efficiency improvements within the industrial sector, preserving biodiversity, as well as others.

As indicated at the outset, we believe that an economy-wide approach would be effective in controlling greenhouse gas emissions; however, the *political* viability of such a program remains uncertain. As anyone engaged in this debate is well aware, there are members of the House and Senate that remain unconvinced that mandatory limits on greenhouse gas emissions are necessary. Others may be reluctant to adopt a sweeping, economy-wide approach. The challenge will be to demonstrate that mandatory limits can be implemented in a way that achieves meaningful reductions while preserving and enhancing U.S. economic competitiveness. A sector-specific program (with offsets) could serve to demonstrate the merits and viability of a broader economy-wide approach.

The members of the Clean Energy Group's Clean Air Policy Initiative have long advocated the regulation of CO₂ from power plants, like the approach outlined in the Clean Air Planning Act (CAPA). CAPA would establish a CO₂ cap-and-trade program for the electric generating sector, including an offset credit program, as part of a comprehensive plan to reduce SO₂, NO_x, and mercury. The electric industry is responsible for approximately 40 percent of U.S. CO₂ emissions. This would create a price signal within the electric generating sector to reduce emissions, while taking advantage of the cost-effective reduction opportunities that are available from sectors and projects outside of the electric generating sector. Taking such action would be a prudent first step in light of the long-term capital planning decisions that are being made by electric generating companies today.

This single sector approach could be readily integrated into a broader economy-wide program if designed with such a transition in mind. For example, if policymakers later decided to regulate CO₂ emissions from the transportation sector, a cap could be applied to upstream fuel users, rather than regulating each individual vehicle. Any fuel delivered to an electric generating facility would be excluded from the upstream allowance obligation to avoid double counting

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(i.e., regulating the carbon in the fuel as well as the stack of the power plant). The allowances under each of these systems would be fully tradable across sectors of the economy to minimize the overall costs of compliance. This hybrid approach, with some sectors regulated upstream and others regulated downstream, was discussed at the National Commission on Energy Policy workshops last fall, and would facilitate a phased regulatory approach leading to an economy-wide regulatory system.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

As indicated above, we believe that there are advantages to an economy-wide system.

However, the question hinges on the degree of political support for an economy-wide program. We would certainly encourage House and Senate members to consider options for designing an economy-wide approach, while continuing to advocate the adoption of a sector-specific cap-and-trade program.

In terms of building a simple greenhouse gas program, inevitably, an economy-wide approach will involve a higher degree of complexity than a sector-specific approach, but the economic advantages would compensate for this increased burden.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

Several options are available for regulating greenhouse gas emissions from the electric generating sector, including (1) *upstream* at the point where carbon and other greenhouse gases are introduced into the economy (e.g., coal mines); (2) *upstream* at fuel supply or processing points (e.g., natural gas pipelines and refineries); (3) *downstream* at the point of fuel use (e.g., boiler or combustion turbine); (4) further *downstream* at the load serving entity (a utility company or power marketer that sells electric energy to end-users); or (5) at the point of electricity use.

In the context of an economy wide approach, there are advantages to an upstream approach because of the smaller number of regulated entities. With respect to the electric generating sector, however, the advantages are likely to be marginal in light of the experience that regulators and industry have with administering and complying with cap-and-trade programs. In terms of the transportation sector and other segments of the economy, the advantages of an upstream approach would be far more significant.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

The decisions that are made regarding the distribution of allowances will need to be carefully weighed to avoid competitive inequities and to best serve the objectives of the program.

The White Paper suggests that the allocation could be used to compensate companies facing higher energy costs as a result of the cap-and-trade program (White Paper, pg 6). In particular, the White Paper suggests that 10 percent of the total allocation would fully offset the adverse impacts on the electric generating sector. However, simply using the allocation to compensate companies for the costs associated with the program raises important equity concerns and neglects the opportunity to drive the kind of innovation within the electric generating sector that will ultimately be required to transition to a lower carbon generating fleet.

First, an allocation based solely on compensation neglects the opportunity to drive innovation and the deployment of new, high efficiency generating technologies.

Second, a one time allocation or grandfathering approach aimed at compensating companies for the costs associated with the program penalizes new market entrants that would be excluded from the allocation entirely and companies in fast growing regions of the country with growing energy needs.

Third, an allocation aimed at compensating CO₂ emitting facilities neglects the contribution of companies that have invested in generating fleets with a lower carbon intensity prior to the imposition of the cap. In the absence of these investments, we would be facing a far greater hurdle in reducing our current emissions.

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In response to these issues, the participants in the Clean Energy Group's Clean Air Policy Initiative have come to favor an updating output based allocation approach as the most equitable and most rationale basis for apportioning emissions allowances. An updating allocation allows (1) new market entrants to be phased into the program and treated like all other sources, (2) retired facilities to be phased out of the program, and (3) regional shifts in the distribution of allowances as a region's energy needs change. In the absence of an equitable distribution of allowances, such as an output based allocation, we would support an alternative allocation approach, such as an auction, to ensure a fair distribution of the burden under a national greenhouse gas program.

An updating output-based allocation rewards and encourages improvements in power plant efficiency, resulting in lower emissions per megawatt hour of energy production. By calculating the number of allowances that a company receives based on its output, it has a financial incentive to improve the operating efficiency of its fleet. An updating output based allocation also encourages the development of new, innovative technologies by providing a mechanism for new power projects to be integrated into the cap-and-trade program on an equal footing. A new source, once it has a sufficient operating history, would be allocated allowances based on the quantity of output that it generates, like the existing facilities in the program.

Load optimization, improved boiler controls, turbine blade and rotor replacements, economizer replacements, upgrades to superheaters and condensers are all strategies that are available for improving the efficiency or "heat rate" of a power plant. In terms of new plant development, renewable energy, natural gas combined cycle technology, combined heat and power technology, nuclear energy, supercritical pulverized coal (used to a limited extent at existing coal plants in the U.S.), ultra-supercritical pulverized coal (currently only in use in Europe and Japan), and IGCC provide opportunities for improved operating efficiencies.

The electric generating sector will need to deploy a combination of these strategies to reduce its greenhouse gas emissions, and the distribution of allowances can help drive this pattern of investment. In the absence of this incentive, we may not get the level of investment required to drive down carbon emissions, while continuing to provide cost-effective energy supplies.

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In terms of zero-emitting facilities—nuclear facilities and renewable projects—the participants in the Clean Energy Group's Clean Air Policy Initiative support an equitable allocation that includes these facilities because of the vital role they play in providing electricity to consumers while avoiding the accumulation of greenhouse gases in the atmosphere. For example, the Clean Air Planning Act proposes allocating CO₂ allowances to renewable energy and to nuclear power facilities, based on the incremental output of the nuclear plant (relative to 1990).

The bottom line is that an updating output based allocation encourages efficiency and innovation. By operating efficiently and cost-effectively, a plant will generate a higher proportion of total electric generation output and therefore will receive a higher share of allowances. Less economically and thermally efficient power facilities, with deteriorated heat rates, will be encouraged to improve their efficiency. This is a common sense approach for policymakers seeking to transition our energy system to a more modern, cleaner generating fleet.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Clarifying Questions 2d:

Set-Aside Programs

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

The participants in the Clean Energy Group's Clean Air Policy Initiative believe that a limited portion of the allowance pool should be reserved for early reduction credit. If, as we advocate elsewhere in our comments, allowances are distributed using an updating output based allocation, then a company would effectively be credited for having invested in higher efficiency, lower carbon emitting generating facilities prior to establishing the cap. Early reduction credits would be justified for credible offset projects outside of the cap (e.g., forest sequestration, agricultural sequestration, landfill methane recovery).

In terms of establishing an offset program, we believe that a pilot phase may be appropriate prior to the start of the program to develop the rules for awarding credit; however, once the cap is in place, a full offset program should be available to drive innovation and to reduce the costs of the program.

There are a multitude of options that are potentially available for reducing the concentrations of greenhouse gas emissions in the atmosphere. To limit these options by relegating offsets to a pilot program would stifle innovation and drive up the overall costs of compliance.

In the long run, many of the offset categories that might be available under a sector-specific program could be incorporated into the cap, as we transition to an economy-wide approach. For example, SF₆ recovery may be available as an offset project under a sector-specific program, but under an economy-wide approach SF₆ manufacturers would be included within the cap. Other project categories will always be treated as offsets, even as the scope of the program expands (e.g., sequestration projects).

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Rather than limiting the availability of offsets at the start of the program, the objective should be to gradually incorporate these reduction opportunities into the cap as the program expands to an economy-wide approach. (See Figure 2 included in the file entitled *Additions_CleanEnergyGroupCleanAirPolicyInitiative.doc.*) In this way, you take advantage of the cost-effective reduction opportunities that are available outside of the capped sectors, while moving to a broader economy-wide approach.

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Submitter's Name/Affiliation: Michael J. Bradley, The Clean Energy Group's Clean Air Policy Initiative

Clarifying Questions 2f:

Allocations for downstream electric generators?

- Should electricity generators be included in the allocation if they are not regulated? (Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)
- What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?
- Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?
- How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?

The participants in the Clean Energy Group's Clean Air Policy Initiative believe that allowances should be allocated to electricity generators if the point of regulation is upstream or downstream from the generator. As discussed in detail above, the allocation can be used as a tool to encourage efficiency in the production of electricity and to drive investment in new technology by treating new and existing facilities on an equal basis. Within the electric generating sector, we believe that an updating output based allocation is the most equitable and most rationale basis for apportioning emissions allowances. This rationale is the same whether the point of regulation falls on the electric generating facility, upstream of the electric generating facility, or downstream of the electric generating facility.

Edison Electric Institute

Submitter's Name/Affiliation: William L. Fang/Edison Electric Institute

Contact: Same

Email: bfang@eei.org

Phone: 202-508-5617

Provide an executive summary of your response(s). **Do not exceed the remainder of this page.**

Under “Additional General Topics,” the Edison Electric Institute (EEI) notes our support for voluntary technology- and carbon intensity-based approaches to the global climate change issue, and endorses robust budget support and implementation of the Energy Policy Act of 2005 (EPA 2005). Our comments also emphasize the critical international dimensions of the climate change issue and the importance of investment overseas in technologies and best practices. We highlight a number of principles that should be used to evaluate proposals addressing the climate issue. While endorsing neither a mandatory cap-and-trade regulatory regime nor any of the specific proposals or concepts in the White Paper, our response raises some key factors that the Committee should bear in mind as it contemplates greenhouse gas (GHG) regulatory schemes, including: the stringency and nature of the targets and timetables; the availability of viable and cost-effective technologies; the incorporation of a safety valve; the availability of offsets; and the fact that a GHG emission trading system would be far more costly, complex and difficult to administer than the Clean Air Act title IV acid rain program.

In our comments in response to Question 1, assuming a cap-and-trade regime were mandated, we would strongly support an economy-wide approach. A sector-based approach would tend to focus costs unnecessarily and unfairly on one or more sectors of the economy. Regarding the most effective place in the chain of activities to regulate GHG emissions, we give two examples of different approaches but do not endorse either. It is important to note that the decision about the point of regulation is independent from the decision about allowance allocations.

In our comments in response to Question 2, EEI would strongly support allocations over auctions in any regulatory scheme. We provide a detailed explanation of our reasoning for supporting this approach. In addition to the set-aside for technology R&D and incentives, a substantial portion of the revenues raised by the safety valve should be segregated and devoted solely to climate technology R&D. The program should also contain provisions for credit for early action, baseline protection or both. There will be trade-offs and winners and losers under any cap-and-trade system, and it is important to recognize that the government cannot “compensate” everyone and eliminate all losers under a mandatory GHG regulatory regime.

In our comments in response to Question 3, we note that a safety valve should be instituted, even at the cost of linkage with other systems, since it would yield the far more important benefit of cost certainty. Regardless, the program should include robust offsets provisions. We also highlight a number of issues that need to be addressed for systems to interlink and benefit the partners involved and not lead to adverse impacts, including making the targets harder to reach.

In our comments in response to Question 4, we note that without comparable action by our key competitors – both developed and developing – U.S. mandatory reduction efforts would adversely affect U.S. trade and industrial competitiveness while doing little to address overall GHG emissions. In developing a mandatory U.S. program, it is important to ensure that it not be more stringent than binding actions by key emitting nations. It should also include a review

Submitter's Name/Affiliation: William L. Fang/Edison Electric Institute

Contact: Same

Email: bfang@eei.org

Phone: 202-508-5617

mechanism to ensure that U.S. actions would not be undertaken in isolation. Our response also raises a number of issues that should be considered in any evaluation review process, and notes that the timing of such an evaluation should be dependent on the specific targets and timetables of the programs being pursued by major emitting nations. In addition, a GHG-intensity metric should be used to compare efforts across nations. We note that technology transfer to developing countries can achieve large near-term emission reductions by closing the gap in emissions intensity between developing and advanced economies, such as through the Asia-Pacific Partnership on Clean Development and Climate.

Question 1. Point of Regulation

Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

Please first read the Edison Electric Institute (EEI) discussion of General Topics.

In responding to and commenting on the questions raised in the White Paper, we are not necessarily either endorsing or opposing the concepts. Moreover, as discussed in our General Comments, it is difficult to comment on a comprehensive approach outside the context of a specific proposal and when key elements have not been addressed.

Who is regulated and where?

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

Assuming a U.S. cap-and-trade system were mandated, EEI would strongly support an economy-wide approach to regulating GHGs. The least economically harmful and most equitable regulatory system would be comprehensive: It would involve all sources and sinks, all GHGs and all sectors of the economy. **Industry end-use is responsible for 28 percent of GHGs in the U.S., but transportation end-use is responsible for 32 percent, commercial end-use for 21 percent and residential end-use for 18 percent.** EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003 (EPA Inventory) at ES-7 – ES-8, 2-8, 2-10 (Apr. 15, 2005).¹

Most costs of a GHG cap-and-trade regulatory regime would ultimately fall on energy and electricity consumers, and thus it is important to minimize the costs of achieving the legislative

¹ Broken out by sector and not by end-use, agriculture is responsible for 6 percent of GHGs in the U.S. EPA Inventory at 2-17.

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goals by applying an economy-wide approach, rather than by attempting to minimize impacts to certain source sectors while only driving up the costs to everyone.

In contrast, as noted in our comments on “Additional General Topics,” a sector approach would tend to focus costs unnecessarily and unfairly on one or more sectors of the economy. Such an approach could cause severe economic harm to be focused on that sector or sectors, resulting in closed plants and lost jobs and driving business overseas. Even with stationary sources, such as power plants, which cannot migrate overseas, there would be competitive issues with regard to Canada and Mexico. In addition, a sector approach would create disproportionate increases in energy costs in the power sector that would also be harmful to U.S. industrial and commercial sectors, causing them to cut production and jobs and perhaps even to close their operations and move overseas. Moreover, electrification and the wider and wiser use of electrotechnologies in end-use applications can play an important role in the long-term de-carbonization of energy systems. A policy that would single out the electric sector would be detrimental because it would perversely promote de-electrification instead.

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Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

This issue focuses on whether the point of regulation should be “upstream,” *i.e.*, at the point of energy production or supply, or “downstream,” *i.e.*, at the point of emissions or energy use.

First, we note that this decision should be applied broadly, not just to the “industrial life-cycle” of GHGs (White Paper, p. 3). We explained above why an economy-wide approach would be preferable, and that is one that would 1) encompass stationary and mobile sources, as well as industrial, commercial, residential, transportation and agricultural sectors of the economy, and 2) cover energy-related CO₂ emissions as well as other GHGs. We noted in our General Comments (p. 3 and graphic 2 in the Appendix) how industry has led other economic sectors since 1990 in reducing carbon intensity.

Beyond purely upstream and purely downstream approaches, the White Paper does not appear to contemplate hybrid approaches, or a mixture of upstream and downstream points of regulation.

There was considerable attention paid to this topic during the National Commission on Energy Policy-CERA workshops last fall. For example, the chart supplied by Van Ness Feldman on this topic lists two downstream approaches, with the remaining four approaches being some variation of upstream/downstream or hybrid approaches.²

Two examples are offered below that encompass a range of point-of-regulation approaches. Our industry does not endorse either of these particular examples.

² See www.energycommission.org, Workshop 2, item 3.

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Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

- **Example A – Upstream (or near upstream) regulation for all fossil fuel energy**

production. As stated by the Committee, placing the point of regulation upstream (or somewhat midstream such as at refineries) would have a much better chance of efficiently capturing all sources of CO₂ emissions in the economy. Under an upstream system, fossil fuel producers and importers would be required to surrender allowances for the CO₂ emissions associated with the fuels that they sell. Downstream fuel users (utilities, industries, households) would see fuel price increases. This price signal would encourage all fossil fuel users to adopt cost-effective approaches to reducing emissions. If GHG regulation were truly to be economy-wide, downstream regulation under a cap would be very difficult to implement, requiring the regulation of every vehicle on the road³ and fossil fuel use in every home (*e.g.*, space and water heating, cooking, etc.). Economic analysis suggests that an upstream system would be as efficient as a price-based hybrid or downstream system that includes non-price-based programs such as CAFÉ. An upstream system would be more cost-effective than a downstream system largely because of the increased administrative burdens associated with downstream control. “Upstream and Downstream Approaches to Carbon Dioxide Regulation,” EPRI climate brief (Jan. 2005), *available at* www.epriweb.com/public/000000000001007762.pdf.

³ While “[i]t is hard to see how greenhouse gas emissions from the transportation sector could be addressed in a downstream permitting system” (White Paper, p. 4), this sector should be covered in a GHG regulatory system.

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However, there would be challenges with an upstream system, such as the burden on fossil fuel producers and the challenge in capturing fossil fuel imports and crediting exports (if the system were not linked with other, international cap-and-trade systems), as well as in ensuring that there are provisions for “crediting” those fossil fuels whose combustion products were captured and sequestered.

- **Example B – Downstream regulation of fossil fuels with a limited number of users (e.g., coal), and a hybrid system for all other fossil fuels that ensures economy-wide coverage under the cap.** The latter could mean upstream regulation of some sectors and downstream regulation of other sectors, all within the context of a cap-and-trade system. The electric utility industry has implemented and established an administrative process under the Clean Air Act title IV acid rain program that could help provide a basis for developing a much more comprehensive GHG program. Globally, most GHG policies and proposals to date have either 1) focused a downstream cap on emissions sources within a group of sectors (e.g., electric generators and large industry) or 2) embraced hybrid regimes with some downstream focus under an emissions cap and a mix of efficiency and technology standards outside of the cap to cover emitting activities not amenable to regulation at the source under the cap. For example, the European Union (E.U.) emissions trading system (ETS) covers less than 50 percent of economy-wide emissions, but the E.U. will supplement the ETS in Phase II with taxes, efficiency standards, technology standards and incentives in unregulated sectors. EPRI climate brief, *supra*. At a minimum, if a hybrid approach were followed, it should still be

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imposed upstream of all energy end-users, and no end-user's source of energy should be exempted.

The White Paper and its accompanying questions are constructed with a cap-and-trade framework in mind. Examples A and B above are consistent with this approach. However, there are alternative approaches, such as a voluntary program or tax framework, which are not discussed in the White Paper. We discuss voluntary approaches in greater detail in our response on "Additional General Topics." As with a cap-and-trade framework, there are a number of issues that would need to be addressed concerning a tax approach, including where in the fuel stream to assess the tax, administrative simplicity and compensatory mechanisms.

It is important to understand that the decision about whether the point of regulation is upstream or downstream would be independent from the decision about allocations of allowances. EPRI climate brief, *supra*. Any allocations that would be justifiable for a downstream system could be just as justifiable under an upstream system.

Moreover, no matter which point-of-regulation approach were chosen, a system should include non-CO₂ GHGs in order to be truly comprehensive. Most of these are produced as byproducts of industrial processes. Not only should the appropriate point of regulation be established for these gases, but also appropriate "exchange rates" between these gases and CO₂ should be established.

Furthermore, regardless of which point-of-regulation approach were adopted, the regulatory system should ensure that allowances or permits are fully tradable across sectors. Fungible

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credits and liquidity in the marketplace are key elements of any successful emissions trading system.

As with other key issues, this issue is difficult to address in isolation, and views could change depending on how other issues, such as allocations v. auction and set-asides/carve-outs, were treated.

Question 2. Allocation

Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

Please first read the Edison Electric Institute (EEI) discussion of General Topics.

In responding to and commenting on the questions raised in the White Paper, we are not necessarily either endorsing or opposing the concepts. Moreover, as discussed in our General Comments, it is difficult to comment on a comprehensive approach outside the context of a specific proposal and when key elements have not been addressed.

Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

EEI would strongly support allocations over auctions in any regulatory scheme distributing allowances or emissions permits. A near 100-percent allocation – with a small percent reserved for annual auctions – would be recommended.¹ The following explains our reasons for this position.

A literature exists that supports the notion that if more than a very small fraction of carbon permits were to be allocated to companies affected by a carbon cap, they would be made wealthier than before the policy. The underlying premise is that a full allocation would increase the value of affected companies relative to their position without regulation at all. This possibility is often cast in a highly negative light by reference to it as “windfall profits” from free

¹ For example, under the Clean Air Act Amendments of 1990, more than 97 percent of the sulfur dioxide (SO₂) allowances are allocated and less than 3 percent are auctioned, with the revenues from the auction flowing back to the affected entities.

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allocations.² The White Paper reflects an outright acceptance of this notion, without any critical assessment of either the extent to which this notion has stretched beyond the reasonable interpretation of the supporting literature, or the lack of realism in some of its analytical underpinnings.

Indeed, the first paragraph of Question 2 of the White Paper reveals the strong preconceived acceptance of this notion where it states that “free allowances might result in greater cost and complexity for the program,” and then that an auction could “minimize the costs of a trading program to the U.S. economy as a whole” (p. 6). Neither of these statements is supportable.

Whether allowances are allocated or auctioned has no implication for the cost of the program to the economy as a whole, **except if revenues from an auction were used to reduce marginal income tax rates.**³ The White Paper does not even suggest the possibility of tax rate reductions, and it seems highly unlikely that such provisions would be or should be introduced into legislation mandating a carbon cap. We do not discuss this remote possibility further. In addition, free allocations may increase the complexity of the political process for agreeing on an acceptable cap-and-trade policy, but once established, they involve far less administrative cost

² This is alluded to in the White Paper, p. 6.

³ “Carbon taxes, as well as carbon quotas or tradable permits that are auctioned by the government, enjoy the revenue-recycling effect so long as the revenues obtained are used to finance cuts in marginal tax rates of distortionary taxes such as the income tax. In contrast, grandfathered (nonauctioned) carbon quotas and permits fail to raise revenues and thus cannot exploit the revenue-recycling effect. Carbon taxes [and auctioned quotas and permits] whose revenues are returned through lump-sum transfers to households also fail to enjoy this effect.” I. Parry, R. Williams & L. Goulder, "When Can Carbon Abatement Policies Increase Welfare? The Fundamental Role of Distorted Factor Markets," Journal of Environmental Economics and Management 53, Vol. 37, No. 1 (Jan. 1999).

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and complexity – for both government and private companies – than would an auction that would have to be conducted on a regular basis.

The original basis for the notion that only a small percent of the allowances need be allocated before company wealth is increased comes from very abstract and idealized simulations using economic models, starting with a paper by Bovenberg and Goulder. A. Bovenberg & L. Goulder, "Neutralizing the Adverse Industry Impacts of CO₂ Abatement Policies: What Does It Cost?," Behavioral and Distributional Impacts of Environmental Policy (Univ. of Chicago Press 2001). Similar analyses followed, all of which used idealized economic models and assumptions that do not reflect some important real-world policy and energy market attributes.

Even working within the framework of one of the idealized economic models, Smith, Ross and Montgomery reported several very important caveats to this literature's findings that only a small percentage allocation would offset losses to companies, and demonstrated "how such conclusions are inappropriate for most of the carbon trading schemes that are envisioned for the real world." A. Smith, M. Ross & D. Montgomery, "Implications of Trading Implementation Design for Equity-Efficiency Trade-offs in Carbon Permit Allocations" 1 (Dec. 2002). They found:

- That the small percentages described in the literature depend fundamentally on a presumption that the free allocation will remain **in perpetuity**. If there is any expectation or formal decision that allocations will be phased out at some point in the future, "then the fraction of allowances that must be allocated to achieve the equity-value compensation must be greatly increased." *Id.* at 24-25.

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- That if the carbon cap is not completely comprehensive of all sources of emissions, then the aforesaid fraction necessary to allocate just to offset profit losses of affected energy companies will be even higher, “and may even exceed the number [of allowances] that will exist.” *Id.* at 25.
- That the fractions that the literature reports as sufficient to just compensate energy sectors are based on models that do not consider individual companies; they instead aggregate winners and losers within broadly defined sectors, and estimate what it takes to compensate the **net** losses rather than the individual company losses. This aggregation artificially reduces the estimated percentage of allocations needed to offset losses, and the resulting amount would not be sufficient to cover the losses of those companies that would actually face losses. The underestimate may be very large.⁴

There are also a number of limitations to the economic models themselves. Instead of excess profits, generator profitability most likely will decline as a whole without full allocations. The real situation is highly complex, with different reasons for power companies that are regulated and deregulated.

⁴ K. Palmer, D. Burtraw & D. Kahn, “Allocation of Emission Allowances in the Regional Greenhouse Gas Initiative Cap and Trade Program: Asset Values and Compensation,” Electric Utilities Environmental Conference (Jan. 23, 2006) – relying only on an electric sector model, rather than a model with all energy sectors – also reported that the allocation necessary to compensate just the companies with losses could be several times larger than the fraction that is typically reported, based on compensating the net losses of a large aggregated sector.

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Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

- In **deregulated** power markets, excess profits will not inevitably occur as predicted by economic models, because wholesale power markets are dominated by volatility and prices are not determined by underlying marginal generator costs, as the economic models assume. When real-world power prices are not determined by marginal costs, they will not rise when a carbon cap is imposed, **but such a cost-price relationship is the core assumption of the idealized economic models that drives their finding that a 100 percent allocation would create higher profits under a cap policy.** The idealized models also ignore any volatility in market pricing, which would also be expected to increase under a cap policy.
- Companies in **regulated** power markets are required to return the value of any allocations to the ratepayer in full, so a 100 percent allocation to such companies will certainly not create the purported overcompensation. At the same time, regulated company shareholders still face lost profitability that auctions could exacerbate. This is because the companies still face the expense of emissions reductions and other compliance efforts, but will likely experience a substantial regulatory lag in recovery or less than full recovery of costs due to varying regulatory outcomes, including rate freezes. While none of the value of any allocation would flow to the company (because it will be required to flow to the ratepayers), such companies would face exacerbated losses from rate recovery lags if they also were required to make direct expenditures to purchase all of their allowances through an auction.

Question 2. Allocation

Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

Auctions do not enhance “fairness” either. First, the cap itself would impose costs on power and other companies, creating financial distress. An auction would then impose significant additional costs, worsening their financial distress; ultimately, **unless auction revenues were to be rebated to the same companies**, an auction would unnecessarily take asset values from regulated companies and redistribute those takings to other parts of the economy. State and regional distributional impacts from a redistributive auction would follow along the same lines as the company impacts, with Midwestern and Southeastern states more adversely affected.

Regarding the set-asides and carve-outs identified on pages 6-12 of the White Paper, priority should be given to affected industries who incur significant costs to operate within the mandated emission limits. In addition to any set-aside for technology research and development and incentives, EEI supports the principle that a substantial portion of the revenues raised by the safety valve be segregated and devoted solely to climate technology research, development, demonstration and deployment that helps to meet the goals of the legislation. The program should also contain 1) provisions to credit companies for actions taken that lead to improvements in carbon intensity or reductions in GHG emissions prior to the beginning of the program, 2) baseline protection or 3) both credit for early action and baseline protection.⁵ However, it is important to note that, while there may be multiple attractive set-asides, increases in the number of set-asides in a cap-and-trade system – and in the percentages of such carve-outs – would increase the costs of compliance. Moreover, any set-asides would need to be consistent with the goals of the legislation and principles that we set forth in our General Comments. Furthermore,

⁵ These credits should include reductions, avoidances and sequestrations reported under the Department of Energy's Energy Policy Act of 1992 section 1605(b) program as well as other credible programs. See White Paper, p. 8.

Question 2. Allocation

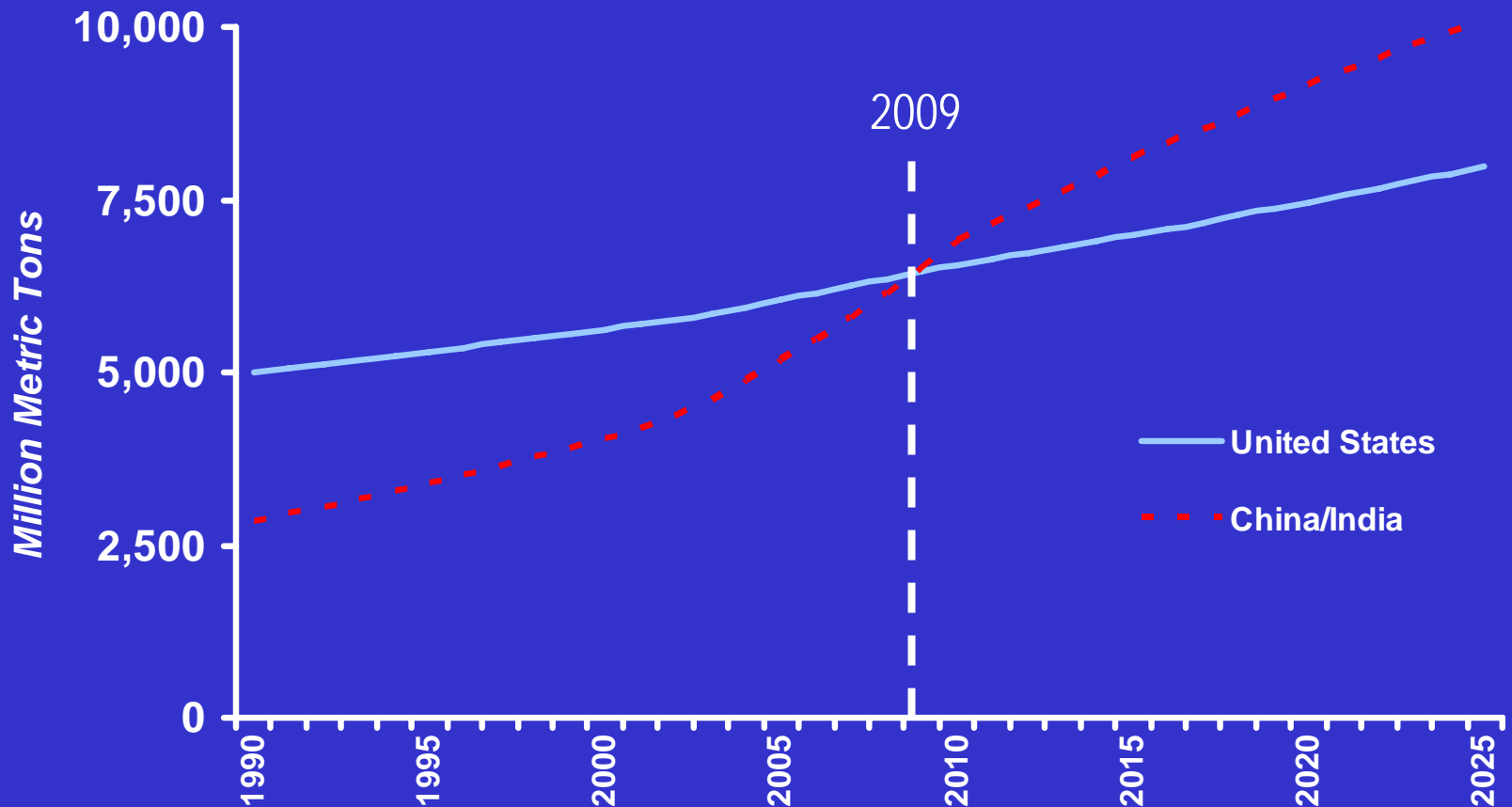
Submitter's Name/Affiliation: William L. Fang, Edison Electric Institute

trade-offs would have to be made. There would be winners and losers under any cap-and-trade system, and it is critical to recognize that the government could not “compensate” everyone and eliminate all losers under a mandatory GHG regulatory regime.

In conclusion, the widespread view that regulated companies would be made wealthier with even a modest percentage allocation is not supportable when real world aspects of the way that the policy would function are considered. Even 100 percent allocations might leave many companies facing substantial losses in profitability as a result of a carbon cap. Further, it is technically infeasible to perform model-based analyses that could give a more precise estimate of a correct “percentage” that could achieve compensation, even on an aggregate basis. Finally, no allocation scheme can offset all of the costs that a cap would impose on companies and consumers throughout the economy. **In sum, EEI believes that the best and simplest approach would be to adhere to an allocation scheme that eliminates or minimizes the use of an auction.** Within that allocation, issues relating to new sources/new units or updating would need to be addressed.

It is important to understand that the decision about allocation of allowances would be independent from the decision about whether the point of regulation is upstream or downstream.

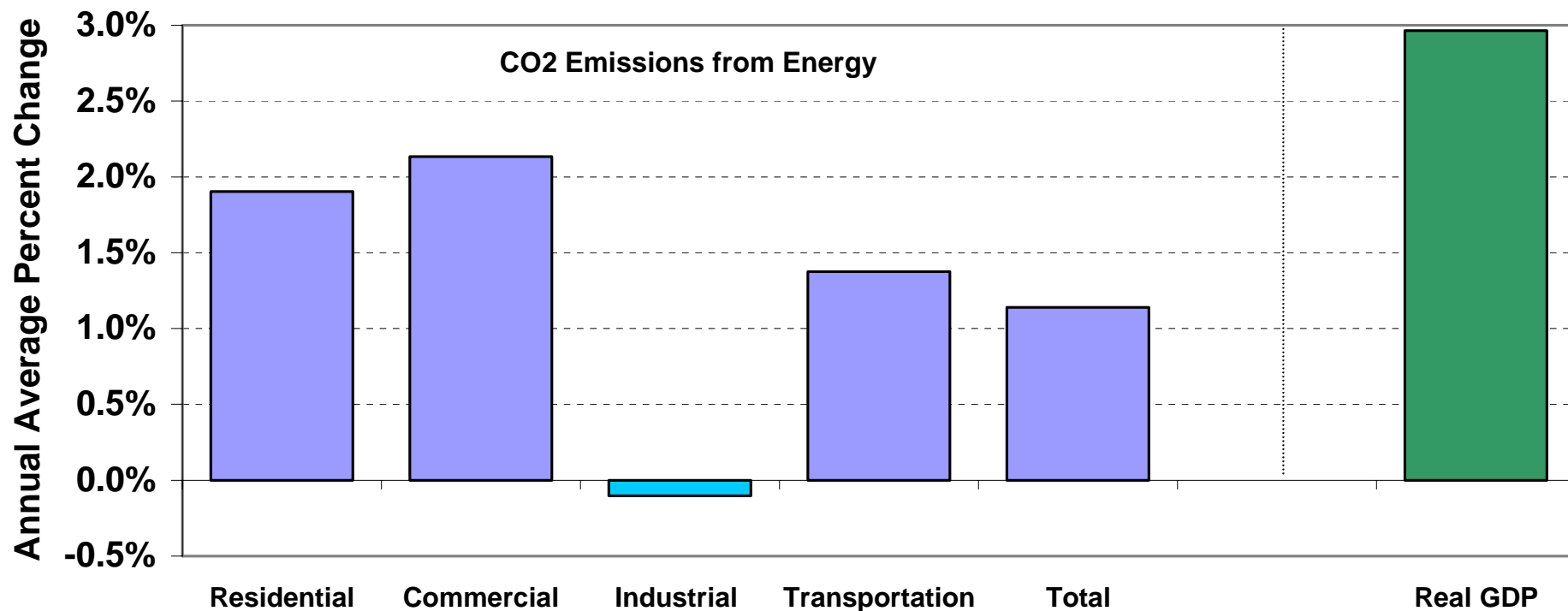
CO₂ Emissions: United States vs. China & India (1990-2025)



Source: Energy Information Administration (EIA), International Energy Annual 2002 & International Energy Outlook 2005

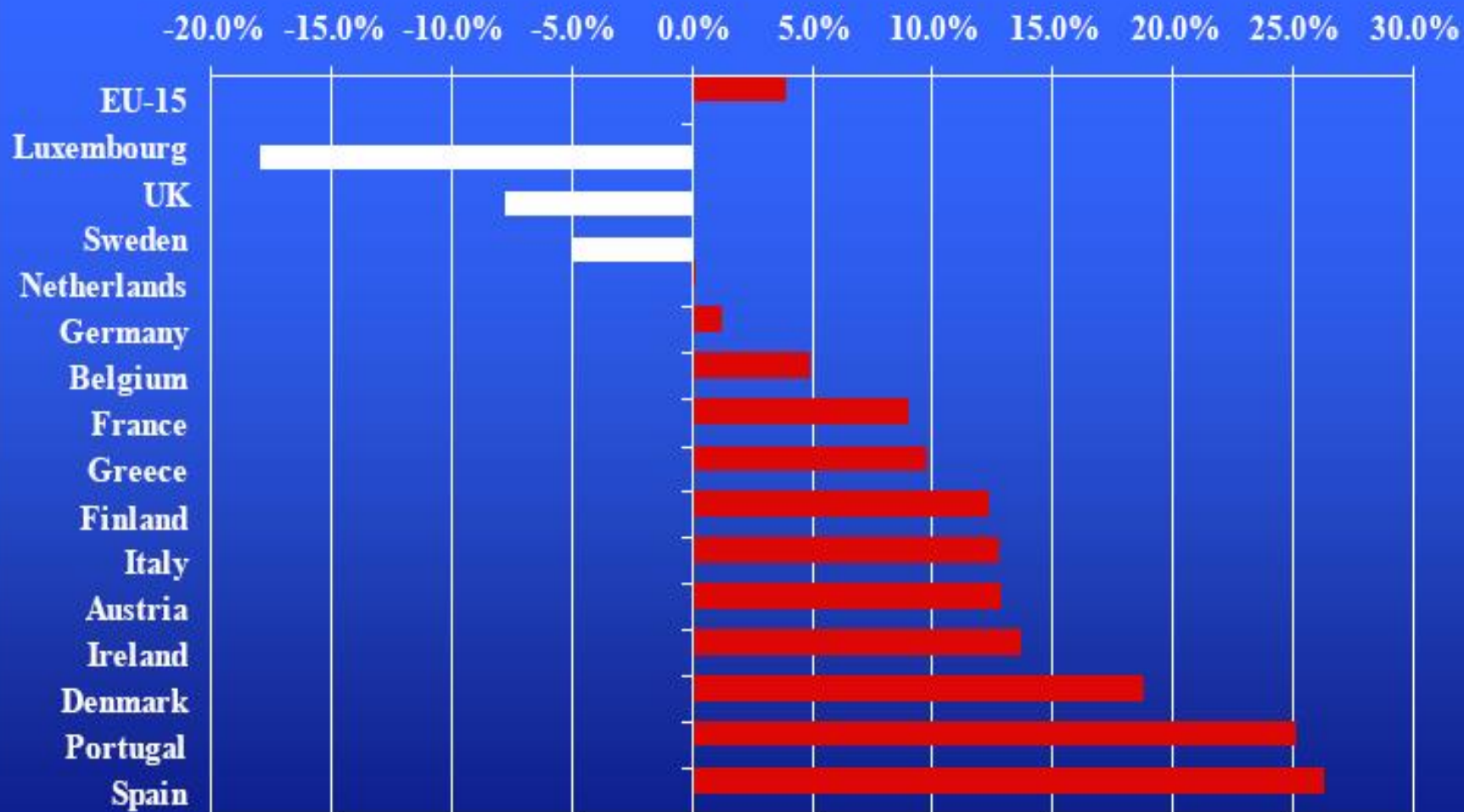
CO2 Growth Only 38% of GDP Growth And Industry Emissions Down

1990 to 2003



Source: EIA, *Emissions of Greenhouse Gases in the United States 2003*. GDP data from Bureau of Economic Analysis. Each sector includes allocated electricity generation emissions.

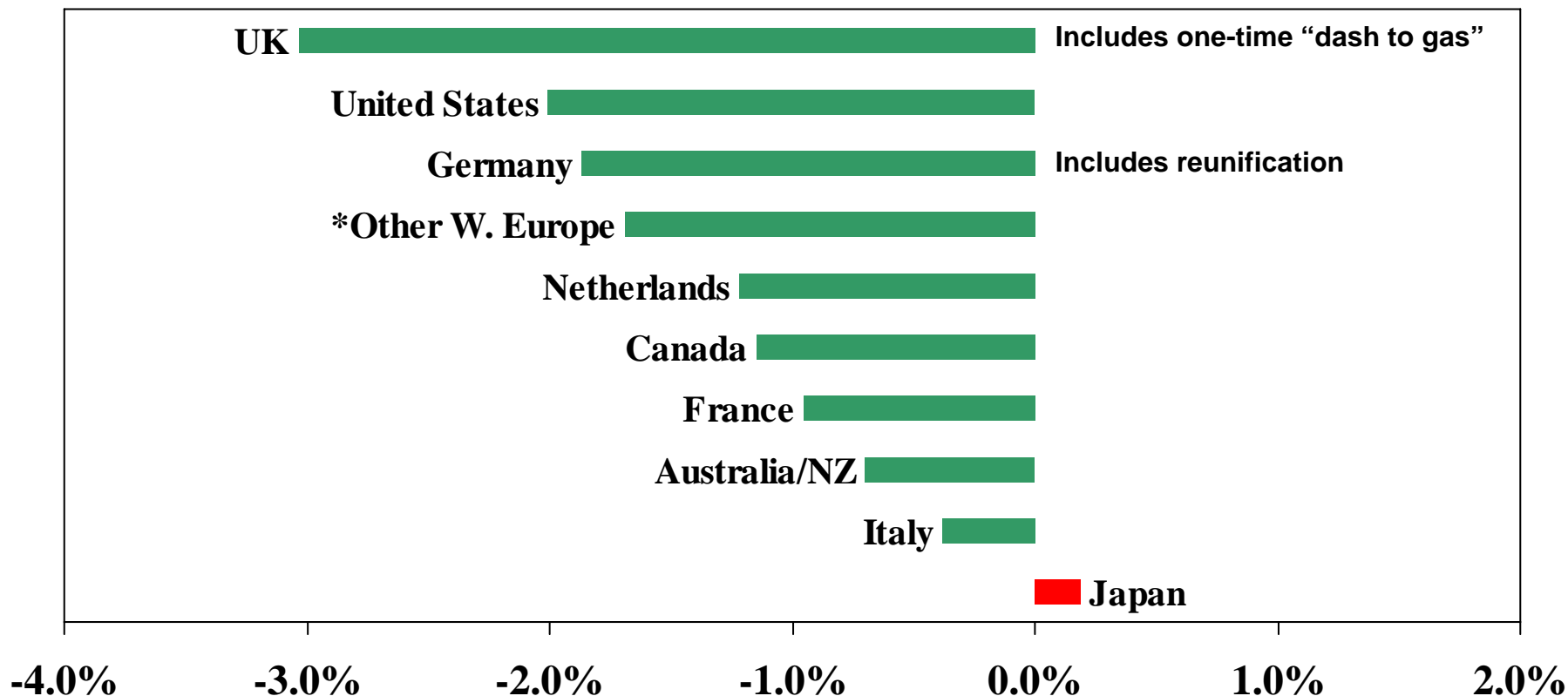
Greenhouse Gas Emissions in the European Union Projected to Exceed Kyoto Targets in 2010



Source: European Environmental Agency, November 29, 2005

U.S. Making Strong Progress Reducing Carbon Intensity (CO₂/GDP)

1993-2003 Annual Avg. Percent Change



*Other W. Europe - Austria, Belgium, Denmark, Finland, Greece, Ireland, Luxembourg, Portugal, Spain, Sweden

Environmental Defense

Submitter's Name/Affiliation: Environmental Defense

Contact: Elizabeth Thompson

Email: ebthompson@environmentaldefense.org

Phone: (202) 572-3368

Environmental Defense thanks Chairman Domenici and Senator Bingaman for the opportunity to comment on their white paper, *Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System*. We applaud the Senators' commitment to establish a mandatory system to limit U.S. releases of greenhouse gases into the atmosphere. As the Senators understand, the time for additional study and exploratory voluntary programs is over. It is time to determine the best policy design to meet the challenge of climate change by unleashing the power of innovation and extending incentives to reduce greenhouse gas emissions throughout the economy.

The Goal. The first principle of effective climate policy is establishing a clear emissions target related to the problem we are trying to solve. That problem is the increasing concentrations of greenhouse gases in the Earth's atmosphere, which are causing an accelerated warming of the planet. Alarmingly, Americans are now learning that this warming is producing effects around the globe far faster than most had expected. Therefore, we need to cap U.S. emissions of greenhouse gases sooner rather than later. A formula that would allow emissions to continue to rise for the next 15 – 20 years (albeit at a slower rate) is inconsistent with the goal of stabilizing the GHG concentrations in the Earth's atmosphere before there are irreversible, dramatic effects. Therefore, Environmental Defense urges the Senators to establish fixed limits on total greenhouse gas emissions, to take effect not later than 2010, so we do not continue to make the task of stabilizing concentrations even harder, more economically disruptive, and possible only at a higher level of concentrations (see response to Feinstein 1).

Innovation. Concerns about the potential cost to the economy from any sort of emission target are understandable – and should be a factor in determining the best overall policy. There are many policy design decisions that can help manage costs while maintaining a firm emission limit (see Additional). Environmental Defense believes the most powerful tool is the ingenuity of the American people responding to incentives from our market economy. A stable and predictable emissions limit creates the demand for emission reduction and offset technologies. Market demand and innovative entrepreneurs will provide a better mix of technologies that any government bureaucrat could choose. Similarly, the fundamental elements of emissions trading and banking in a competitive market serve to grind down cost far better than could any government program.

Agency Action. While it discusses the form of climate policy, Congress should use its oversight role to ensure Federal Agencies take sensible measures to enable emission reduction or adaptation measures such as:

- Establish standards and procedures for calculating and awarding emissions offsets from agricultural and forest practices to sequester carbon;
- Establish standards and safeguards for the geologic sequestration of carbon;
- Conduct regional studies on potential infrastructure impacts of climate change and associated adaptation strategies and costs.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Environmental Defense

Question 1. Point of Regulation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

Participation. As is noted in the white paper, no one sector of the economy is responsible for all of the greenhouses gas emissions into the atmosphere. Also, innovation does not occur only in one sector of the economy. So the appropriate regulatory mechanism is one that encompasses all major sources of emissions and allows the entire economy an opportunity to provide emissions reduction strategies to help achieve the goal.

For example, agriculture might not be directly regulated but can participate in providing solutions through carbon sequestration activities provided that the policy designed to deal with the problem of climate change allows emitters to seek the cheapest sources of compliance – which may come in the form of paying for low cost reductions or offsets in another sector.

We note that all serious options for U.S. climate policy must have a firmly established limit on greenhouse gas emissions for the major sources of emissions and should then provide maximum flexibility to the private sector in meeting that requirement.

Timing. While comprehensive climate management needs to take into account the major sectors of electricity production, large manufacturing, and transportation, there is no requirement that each sector needs to be responsible for the same percent reductions in emissions or that each sector's compliance schedule needs to be identical to the others.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

For sectors such as the electric generating or large manufacturing sectors, placing the point of regulation at the facility level is appropriate. First, this is where decisions among generating options are made. Second, many of the affected entities in these sectors are familiar with the operation of market-based air emission programs. Additionally, there can be contributions to U.S. GHG emission reduction goals by specific programs such as efficiency standards for appliances that may not necessarily be captured in a market-based system.

However, this does not preclude tracking and measuring fossil fuel production at the mine mouth or wellhead for purposes of estimating emission inventories.

Please see our response to Clarifying question 2e for a discussion of the transportation sector.

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Question 2. Allocation

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Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

Allowances as a Cost Management Device

Protecting future generations from the dramatic effects of climate change can be done in a way that minimizes cost to the overall economy. Environmental Defense believes, in addition to availing themselves of low-cost offsets, that companies will be best served in their efforts to manage costs by clear and consistent rules for allowance banking and borrowing. The use of allowances can be an additional means of addressing members' concerns related to cost management in climate policy but it will entail more bureaucracy and has the additional drawback that as more allowances are set aside, the costs for other market participants rise. Using allowances provided under the overall emissions limit would maintain the environmental integrity of the program and constitute a more cost-effective component of an overall, coherent program than cost-ineffective devices, which allow emitters to exceed the overall limit through the payment of a government fee or tax.

Instead of devices that allow emissions limits to be exceeded, the Congress can establish a program utilizing allowances under the emissions limit to manage costs borne by individuals, companies, sectors, and the economy at large. The specific mechanism could vary for each entity. For (1) companies and individuals, a small number of allowances (say 1% of the annual allocation) could be set aside in a reserve as an insurance fund for the benefit of affected consumers or individual companies. The Secretary of the administering agency would have the authority to award allowances out of the reserve, upon application, based on predetermined criteria to companies that would be otherwise unable to meet their allowance obligations because of extreme financial hardship. Or a number of allowances could be sold from the reserve, and the proceeds channeled to assist a disproportionately affected community. For (2) specific economic sectors, a larger number of allowances (say 4%), while initially allocated in some fashion, could be reallocated periodically among economic sectors (again, according to predetermined criteria) to address changing circumstances and particular sector concerns. These allowances could be sold to provide funds for worker retraining. Finally, for (3) the economy as a whole, if there is some unexpected significant event that impacts the economy as a whole or at least many sectors within it, the Secretary could authorize a "wholesale borrowing" of allowances from future compliance years to be used in the time period of concern. Because those allowances would eventually be "paid back" with interest once the economy had adjusted to the event, overall environmental integrity would not be harmed. Such a system would not allow emitters exceeding their limits to pass the cost on to the general consumer/taxpayer.

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Other Uses of Allowances

The White Paper asks several questions regarding the use of allowances for specific public policy purposes. It is difficult to answer questions regarding how much of an allowance pool should be used for a specific purpose with any specificity without knowing the overall number of allowances that would be provided under legislation. The number of allowances plays a role in determining scarcity, which in turn plays a role in determining price and the maximum amount of revenues that would be available for public purposes.

In general, Environmental Defense believes that the practice of awarding allowances is best used as a cost management device or as a source of revenue for adaptation assistance. We believe that markets, spurred by a stable and predictable emissions cap, are the best means of stimulating technological innovation and operational efficiency – the latter is a huge and often unrecognized source of energy conservation.

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Questions 2a:

Technology R&D and Incentives

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

While it may be appropriate to use some very small portion of allowances to stimulate technology and early deployment, the primary driver for the deployment of innovative technology should be provided by market demand, which is created when an overall limit on GHG gases is set. Once the limit on GHG emissions is set, the market, through the traditional operation of supply and demand, will provide the incentive for such deployment. Setting aside too many allowances for government technology programs raises costs to all participants.

The very nature of the above questions reflects the difficulty of administering government programs to deploy technology. In order to prevent the confusion of goals, traditional government research and development programs should continue to be authorized and appropriated in a separate process from the implementation of regulatory climate change policy meant to reduce emissions. Likewise, the administration of allowances in the regulatory program should not be subject to the annual appropriations process.

While these questions focus on financial mechanisms to promote technology, there are opportunities today to develop enabling mechanisms that assist innovation. For instance, as part of the development of carbon capture and storage practices, we need to develop standards and safeguards for geologic sequestration. Congress should use its oversight authority to ensure that relevant agencies take this prudent step now.

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Questions 2b:

Adaptation Assistance

- What portion of the overall allowance pool should be dedicated to adaptation research or adaptation-related activities?
- How should these allowances or funds be administered?
- What is the appropriate division between federal vs. regional, state, and local initiatives?

To better answer these questions, Environmental Defense recommends that Congress, without waiting for the passage of climate policy, instruct the Congressional Research Service and the Government Accountability Office to work with the appropriate state and federal agencies to conduct a series of regional studies to determine what types of infrastructure and adaptation investments would be required for the low, medium, and high cases of the IPCC climate change scenarios, as well as to identify the costs of those investments, on a local, regional, and national basis.

As stated in our response to Question 2, Environmental Defense believes that adaptation assistance is an appropriate use of allowances. However, we caution that it is conceivable that if climate policy is too long delayed, then adaptation costs could dwarf what could be provided by any allowance allocations and will need to be funded from general revenues. Conversely, if we are successful in limiting emissions and the extent and speed of climatic changes, adaptation costs are likely to be much less significant.

As a practical matter, it will be difficult in some cases to identify adaptation-related activities. For example, if hurricanes do increase in intensity under climate change then is hurricane-related damage, an adaptation-related activity? If reduced soil moisture occurs in the Midwest, as many climate models predict, will the demand for agricultural assistance be adaptation-related?

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Questions 2d:

Set-Aside Programs

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

Environmental Defense believes that offset projects from non-regulated entities may be one of the most powerful cost-minimizing design elements of climate policy. In its analysis of various electric utility emissions proposals, EPA projected low carbon allowance costs for the Clean Air Planning Act, largely because of its unlimited use of offsets.

As the White Paper notes, such projects that achieve greenhouse gas reductions from sources that are not under the cap present significant challenges in terms of measuring, monitoring, and verifying emission reductions. Therefore Environmental Defense recommends that Congress immediately, without waiting for the passage of climate policy, instruct federal agencies to work with their state counterparts and affected entities to develop protocols to address these issues.

One of the dangers of a policy design that establishes a flat fee for allowances would be that it completely shuts down the possibilities provided by sectors, such as agriculture and biofuels, which could provide a robust and immediate offset market that both helps to mitigate the cost of climate legislation and spurs rural economic development by rapidly expanding the market for renewable fuels. In addition, flat fees discourage innovations whose initial market cost might be higher than the flat fee but whose mature market cost might be competitive or lower. The secondary economic benefits of enhanced income streams to offset suppliers are also eliminated by a flat fee, whose revenue would accrue to the government rather than the private sector.

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

Clarifying Questions 2e:

Special considerations for fossil-fuel producers?

- Would some upstream fossil fuel producers be unable to pass the cost of purchasing permits or allowances through in fuel prices if they are the regulated entity?
- Is there a sufficient policy rationale for addressing these costs to justify the complexity of setting up and administering an allocation system for these entities?
- What other options exist to address the inability of fossil fuel producers to pass through these costs?

Possibly one of the most challenging sectors to address is that of transportation and fuels. At the same time, addressing carbon emissions in this sector in a manner that improves efficiency has the greatest potential to provide additional benefits to society by means of greater energy security. Improved technology, new fuels, or more efficient infrastructure choices are just a few of the possible options that could be employed in this sector.

The primary factor in determining whether costs can be passed on to consumers is market structure. At one extreme, highly competitive industries will be limited in passing any costs unique to the firm on to consumers. At the other extreme, monopolists will have no problem passing costs along to consumers given the lack of competition. Most fossil fuel producers are in an advantageous position. The concentrated market structure of the industry and the continued inelasticity of demand for oil means that fossil fuel producers collectively have significant market power to set prices and to pass on costs to consumers.

In addressing allowances for entities from the transportation/fuels sector, a number of policy design issues come into play. Because GHG emissions from transportation fuels are influenced by many other entities, the design of policy for this sector needs to be evaluated holistically, and whether special consideration is needed for fuel suppliers ultimately depends on how the sector is treated overall. With an appropriate policy design, all actors in this sector can be empowered to reduce emissions.

A key question in establishing a market-based program is where to define the appropriate points of regulation to maximize the efficiency and administrative simplicity of the program. In the transportation-fuels sector, there is an inherent tension between defining tractable points of regulation and stimulating actions to reduce emissions by the actors with the greatest power to change behavior or deploy technology. It is important to remember, however, that the most important overall step is to establish the limits, thus getting the arrows pointed in the right direction, whether through upstream or downstream application.

The range of actors in this sector is vast and diverse. It encompasses everything from private individuals to specialized transportation firms to business, institutional, and governmental operators of vehicle fleets, along with motor vehicle manufacturers and other suppliers of transportation equipment. There are multiple levels of government that oversee transportation

Question 2. Allocation

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infrastructure and land use. There are no sharp boundaries around the roles and the emissions-reducing opportunities of the many actors who collectively determine transportation-related emissions. Nevertheless, with the right enabling mechanisms, many pragmatic opportunities can be identified for achieving market-based emissions reductions in this sector.

An important contribution to this sector would be the development of evaluation tools that make explicit the carbon impacts of decisions for various actors. Actions that reduce emissions will have value in a carbon market, providing the actors with a way to recoup any costs or generate profit associated with their action. Thus, policy should motivate *carbon-sensitive decision making*, that is to say, enable each actor to realize value from emissions reductions influenced by their decisions and select options that most affordably reduce emissions. These evaluation tools can help advance a range of options which can provide maximum flexibility while still achieving the desired goal.

A related enabling step is to create sector-appropriate accounting mechanisms, which would have to be tailored differently for each of the diverse actors. Technical issues include: the avoidance of double-counting and the definition of appropriate adjustments to account for the ways actions taken by one actor change the scope of action available to other actors.

A design option to explore in situations where emissions reductions and potential credits are influenced by more than one actor is the concept of *first-mover* incentives. An entity that acts first would receive a disproportionate share of the credits or, in some instances, perhaps claim all of the emissions reduction credits associated with their decision. Care would then have to be taken to not discourage other actors from doing what they can, even though the amount of credit available may have been reduced. Obviously, an idea such as this will require careful analysis and policy design, balancing the needs of different stakeholders and seeking to provide an even-handed incentive structure in light of the uncertainties about future allowance values, costs, and opportunities.

Another promising area for emissions reductions in the transportation fuels sector could come from expanding alternative, renewable fuels like ethanol. For instance, depending on how ethanol is made and produced, it could provide significant reductions in greenhouse gas emissions, while also revitalizing the nation's rural economy and lessening the nation's dependence on foreign sources of energy. The key to achieving these multiple benefits lies in forming standards and certification processes for an ultra-efficient, value-added form of ethanol.

The standards used to certify this fuel will provide a way for renewable fuels to demonstrate, in provable ways, exactly how much carbon they are reducing from our transportation fuels. Furthermore, with the certification of low carbon fuels, there can be significant opportunities for cooperation between sectors, wherein vehicle manufacturers might have an incentive to expand their production of flexible fuel vehicles as a means of meeting carbon limits.

One positive, win/win initial step would be to authorize the creation by the states of state biofuel authorities who would coordinate, measure, and administer for carbon monitoring purposes the substitution of biofuel for traditional petroleum products in their states. Farmer-owned biofuel cooperatives, operating within the authority's guidelines, would sell the carbon credits thus

Question 2. Allocation

Submitter's Name/Affiliation: Environmental Defense

created into the national offset market. This places pressure on both upstream and downstream industries to move in the right direction. It rewards farmers for producing biofuels by creating an opportunity for biofuels to compete in a market for low-carbon fuels.

While the above discussion focuses on ethanol, one can also foresee opportunities for other sources of low-carbon motor fuels. For instance, the petroleum sector could reduce carbon emissions through carbon sequestration enhanced oil recovery projects that would yield reduced carbon conventional motor fuels.

This discussion demonstrates that there are many actors in the transportation/fuels sector and, accordingly, many opportunities to achieve emission reductions throughout the sector. It will require more than one policy tool to activate all opportunities. Environmental Defense looks forward to exploring these ideas and others with you in far greater detail than we do in these brief comments.

Generators for Clean Air

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air
Contact: Paul Bailey
Email: pcbailey@cox.net
Phone: 202-833-8930 or 703-560-8809

Generators for Clean Air (GCA) represents nine electric generating companies whose collective generating capacity is 70% coal-fired. GCA does not have a consensus view among its members on mandatory climate change legislation. Some companies believe reasonable mandates are appropriate; others do not support mandatory measures. Nonetheless, we believe it is prudent to offer constructive views on the design of a legislative program, should Congress ever decide to adopt mandatory measures.

GCA offers its response to Questions 1 and 2. Our main points are as follows:

- If Congress enacts mandatory climate change legislation, it should be broad in scope and apply economy-wide.
- Reducing compliance costs and electricity price increases should be one of the criteria for deciding on the appropriate point of regulation. GCA urges Congress to minimize the cost and financial impacts of climate change legislation on both electricity generators and their customers.
- As a group, GCA is still evaluating the appropriate point of regulation. However, if Congress enacts climate change legislation, it should allocate a substantial number of allowances to fossil fuel generation, regardless of the point of regulation.
- The electric power sector should receive allowances based on its pro rata share of greenhouse gases. Allocation of allowances within the electric power sector should be based on either historic emissions or heat input.
- Within the electric power sector, fossil generation should receive an allowance allocation that is adequate to significantly mitigate compliance costs and increases in electricity prices. Allocating allowances to nuclear generation penalizes coal-fired generation.
- Allocating 95% of allowances to fossil generation would significantly mitigate compliance costs. By contrast, auctioning allowances would result in compliance costs about 20 times greater than a 95% allocation.
- Congress should consider ways to prevent a patchwork of state requirements that are inconsistent with the objectives of a national program. Also, Congress should consider mechanisms to ensure pass through of compliance costs.

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Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

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Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Who is regulated and where?

(See answers to two clarifying Questions 1a and 1b.)

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

The individual members of GCA hold different views regarding mandatory climate change measures.¹ Some companies do not support mandatory measures because of economic and other concerns, while other companies believe that reasonable mandates are acceptable. Nonetheless, because of the energy, economic and competitive implications of mandatory greenhouse gas (GHG) reduction measures, GCA believes it is prudent and responsible to provide technical and policy input regarding the framework and design elements of climate change legislation. Thus, the premise for GCA's comments is that, if Congress were ever to enact climate change legislation that mandates limits on GHG emissions, such legislation should be carefully crafted to accomplish its objectives with minimal adverse consequences.

If Congress enacts mandatory legislation, the scope of the program should be broad, applying to all sectors of the economy, not just the electric power sector, in order to optimize the effectiveness of any emissions reduction program. Similarly, the program should apply to all GHGs, not just to carbon dioxide (CO₂). Adopting a broad scope would improve the overall effectiveness of limiting GHG emissions, would be more equitable, and would expand the opportunities available to achieve the most cost-effective GHG reductions.

In addition, a number of states are developing mandatory GHG reduction programs. Because a patchwork of state programs could complicate implementation of a rational national program, we urge Congress to consider ways to ensure that state programs do not conflict with the objectives of a national program and to evaluate whether steps should be taken to harmonize these programs.

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¹ GCA is comprised of nine companies: Allegheny Energy, American Electric Power, Cinergy, DTE Energy, PNM Resources, PPL Corporation, PacifiCorp, We Energies, and Xcel Energy. Collectively, these companies own/operate, directly or through subsidiaries, approximately 110,000 MW of generating capacity. About 70% of this capacity is coal-fired, which constitutes approximately 20% of U.S. coal-fired generating capacity.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

The individual members of GCA hold different views regarding mandatory climate change measures.² Some companies do not support mandatory measures because of economic and other concerns, while other companies believe that reasonable mandates are appropriate. Nonetheless, because of the energy, economic and competitive implications of mandatory greenhouse gas (GHG) reduction measures, GCA believes it is prudent and responsible to provide technical and policy input regarding the framework and design elements of climate change legislation. Thus, the premise for GCA's comments is that, if Congress were ever to enact climate change legislation that mandates limits on GHG emissions, such legislation should be carefully crafted to accomplish its objectives with minimal adverse consequences.

GCA is evaluating the relative merits of upstream versus downstream regulation for electricity generation but has not reached a consensus position yet on point of regulation. At this point in time, some GCA companies would prefer a "hybrid" system that regulates electricity generators downstream and regulates other sources upstream.³ Other companies believe that an upstream system that does not regulate electricity generators might be a better approach. One of the major uncertainties GCA is evaluating is the effect of the point of regulation on compliance costs. There are a number of critical questions such as: Would regulating coal mines rather than coal-fired power plants result in higher or lower compliance costs and electricity prices? Would the point of regulation affect the treatment of compliance costs by public utility commissions? What would be the effect on coal prices if coal mines were allocated some, but not all, the allowances needed to comply with a cap? However, all GCA companies agree that an adequate allowance allocation is a necessary precondition if CO₂ emissions from electricity generators are regulated as part of an economy-wide program.

GCA agrees that "administrative simplicity and program effectiveness" are useful criteria to consider in determining the appropriate point of regulation for GHGs. At the same time, GCA's overriding concern in evaluating the point of regulation question is the effect that an upstream versus downstream system would have on compliance costs. We believe an important criterion to consider in designing a mandatory GHG program is the extent to which point of regulation will affect compliance costs. GCA would prefer the point of regulation that results in the lowest compliance costs and smallest increase in the price of electricity. Because compliance costs are directly related to the number of allowances allocated to fossil fuel-fired generators, GCA would

² GCA is comprised of nine companies: Allegheny Energy, American Electric Power, Cinergy, DTE Energy, PNM Resources, PPL Corporation, PacifiCorp, We Energies, and Xcel Energy. Collectively, these companies own/operate, directly or through subsidiaries, approximately 110,000 MW of generating capacity. About 70% of this capacity is coal-fired, which constitutes approximately 20% of U.S. coal-fired generating capacity.

³ Another hybrid approach could involve upstream regulation for oil and natural gas and downstream regulation of coal (e.g., electricity generators and large industrial boilers).

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

favor the point of regulation that results in a full allocation of allowances to fossil fuel-fired generation.

We discuss the results of analysis below to demonstrate how compliance costs are affected by allowance allocations. However, it is important to keep in mind that allowance allocations do not affect emission levels. A smaller allowance allocation does not result in lower emissions but needlessly increases compliance costs. Conversely, a larger allocation does not result in higher emissions but lowers compliance costs. The analyses below are based on the framework of the NCEP's climate change recommendations.⁴ Our comments are not intended to imply support for a mandatory program that would regulate only the electric power sector.

EIA Modeling

EIA conducted macroeconomic modeling of the NCEP climate change recommendations.⁵ The modeling compares the effects of the NCEP cap-and-trade program (with a \$7/metric ton safety valve permit price) to a business-as-usual (BAU) reference forecast for 2015 and 2025. Some of the effects appear modest; others are more significant. For example:

- Electricity prices increase above the reference case by 3% in 2015 and 4% in 2025.
- Coal prices are 50% higher in 2015 and 58% higher in 2025.
- Coal-fired generation decreases by 2% in 2015 and 11% in 2025. (Relative to 2003 levels, coal-fired generation increases 14% by 2015 and 31% by 2025.)
- Natural gas prices increase 5% in 2015 and 8% in 2025.
- Gas-fired generation increases by 1% in 2015 and 10% in 2025.
- Average household energy expenditures increase by 2% in 2015 and 3% in 2025.
- GDP declines by slightly more than 0.1% in both 2015 and 2025.

Exhibit 1 summarizes other results. (Please see Exhibit 1_Generators for Clean Air.). Compared to BAU projections, some of these impacts appear relatively modest on a macroeconomic scale. However, it is critical to understand that the modeling results are based on a very important assumption regarding allowance allocations:

*Most of the permits (95 percent initially, gradually declining to 90 percent between 2013 and 2022) would be allocated at no cost; the Federal Government would auction the remainder.*⁶

This means that, in order to assure that the macroeconomic impacts of an NCEP-type program remain within the bounds of EIA's projections, at least 95% of the allowances needed for compliance by electricity generators (and other sectors) would have to be allocated at no cost.^{7,8}

⁴"Ending the Energy Stalemate. A Bipartisan Strategy to Meet America's Energy Challenges," National Commission on Energy Policy, December 2004.

⁵ "Impacts of Modeled Recommendations of the National Commission on Energy Policy," SR/OIA/2005-02, Energy Information Administration, April 2005.

⁶ "Impacts of Modeled Recommendations of the National Commission on Energy Policy," SR/OIAF/2005-02, EIA, page 2.

⁷ In addition to an adequate allowance allocation, other provisions of a mandatory program would significantly limit its economic impacts. These provisions include credit for early reductions, maximum flexibility in obtaining offsets, and a safety valve permit price.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

As GCA analysis below indicates, the cost of complying with a program that provides a 95% allowance allocation is still likely to average roughly \$1 billion annually because of the emission reductions required to comply with a cap.

Moreover, the EIA macroeconomic results do not provide any insight into the impacts on regions and states that rely on coal-fired generation. If a smaller number of allowances (less than 95%) were allocated to electricity generators, the impacts would be greater than the results projected by EIA and would be especially serious states that are dependent on coal. Exhibit 2 provides a list of states that rely heavily on coal-fired generation and shows, for example, that 28 states obtained more than 50% of their electricity from coal. (Please see Exhibit 2_Generators for Clean Air.) As legislation takes shape, GCA urges that additional modeling be undertaken to understand the impacts on coal-dependent states and to evaluate the effect of allowance allocations on compliance costs.

GCA Analysis

GCA analyzed two scenarios to illustrate the effect of different allowance allocations on the cost of an NCEP-type program in 2015 for U.S. coal- and gas-fired generation. Our estimates are based on simplifying assumptions and are intended only to illustrate the effect of allocating a sufficient number of allowances (95%) contrasted with an auction of 100% of the allowances. GCA relied on natural gas and coal consumption projections for the electric power sector taken from the AEO2005 reference case which projects the use of 1,075 million metric tons of coal and 8.39 trillion cubic feet of natural gas in 2015. These quantities translate into approximately 2.3 billion metric tons of CO₂ from coal combustion and 460 million metric tons of CO₂ from combustion of natural gas.⁹ We assumed an allowance price of \$7 per metric ton as an upper bound on costs.¹⁰

- **Scenario 1 (Auction)..... \$19.3 billion**
Assuming that all allowances must be purchased at \$7 per metric ton, the upper bound nationwide compliance cost is estimated at slightly more than \$19 billion in 2015.¹¹ Scenario 1 also illustrates the cost of a 100% auction under this set of assumptions.
- **Scenario 2 (95% Allocation)..... \$966 million**
On the other hand, if allowances equal to 95% of emissions are allocated at no cost (EIA's assumption), the upper bound nationwide compliance cost would be close to \$1 billion in 2015.

⁸ As a reference point, the SO₂ trading system established by the 1990 Clean Air Act Amendments allocates 97.2% of allowances to existing electric generating units (EGUs). The balance is sold through an auction each year with the proceeds returned to existing EGUs.

⁹ GCA's analysis uses emission coefficients from EIA's "Voluntary Reporting of Greenhouse Gases."

¹⁰ The NCEP recommendation included a \$7 per metric ton safety valve permit price (nominal 2010\$). EIA modeling projects that the safety valve price would not be reached until 2016. The GCA analysis simply assumes that allowances would cost \$7 in 2015. Obviously, if allowances sold for less than \$7 per metric ton, the cost estimates above would be proportionately less. However, there would still be a dramatic difference in compliance costs between the two scenarios.

¹¹ Although we make the simplifying assumption that allowances equal to CO₂ emissions must be "purchased," in reality, emission reductions could be achieved in a number of ways that would not require the outright purchase of allowances but would still entail some cost.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Our calculations show that the cost of these two hypothetical scenarios differs by a factor of 20, as would be expected from the ratio of allowance allocations (i.e., 100% of allowances must be purchased in Scenario 1 compared to only 5% in Scenario 2).

GCA also undertook similar calculations to illustrate the order-of-magnitude effect of allowance allocations under Scenarios 1 and 2 on three states that are heavily reliant on coal-fired generation.¹² In 2003, Indiana obtained 97% of its electricity from coal-fired generation, Ohio 93%, and New Mexico 90%.¹³ The difference in compliance costs between the scenarios is shown in the table below.

	Scenario 1	Scenario 2
Indiana	~ \$1 billion	~ \$50 million
Ohio	~ \$1 billion	~ \$50 million
New Mexico	~ \$200 million	~ \$10 million

These estimates also show the dramatic effect of allocating no allowances (which is the same effect as auctioning all allowances) compared to an allocating 95% of allowances at no cost.

NCEP Staff Estimates

NCEP staff used NEMS modeling results to estimate the electricity sector's increased fuel costs and revenues as a result of the NCEP climate change recommendations. The estimates assume upstream regulation. Some but not all, of these higher fuel costs would be recovered through higher electricity prices incurred by end users. Costs that cannot be passed through would have to be absorbed by electricity generators, adversely affecting their financial health. The table below summarizes estimates of (1) increased fuel costs resulting from an NCEP-type program; (2) increased fuel costs that would not be passed through; and (3) the increase in fuel costs that would be passed through and, therefore, increase electricity prices. Even if a portion of the

¹² Lacking state-specific projections for 2015, GCA used coal consumption data for 2003 to estimate costs. Because coal consumption would be expected to increase significantly by 2015, the figures above underestimate compliance costs in later years.

¹³ Although New Mexico obtains almost as much electricity percentage wise from coal as Indiana and Ohio, the total amount of coal burned in New Mexico is much less than the other two states. Therefore, the CO₂ emissions and compliance costs for New Mexico would be significantly less than the other two states.

Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

increased fuel costs cannot be recovered, the costs that would be passed through to end users would still be significant.

	Increased Fuel Costs	Costs Not Passed Through	Costs Passed Through
2010	\$12.2 billion	\$4.2 billion	\$8 billion
2015	\$18.7 billion	\$5.7 billion	\$13 billion
2020	\$22.7 billion	\$7.9 billion	\$14.8 billion

The analysis shows that an adequate allowance allocation would be necessary to reduce compliance costs (both costs passed through and not passed through) to a politically acceptable level. This would be especially true in states that rely on coal-fired generation.

Key Points

- Because of the economic and political ramifications, reducing the impact on compliance costs and electricity prices in coal-dependent states should be one of the major criteria in making decisions about point of regulation.
- EIA's analysis suggests that allocating 95% of allowances to the electric generating sector would be necessary to mitigate the impacts of an NCEP-type climate change program. GCA's analysis also indicates that allocating 95% of allowances would substantially reduce compliance costs and, thereby, mitigate increases in electricity prices.
- Allocating 95% of the allowances would not affect the level of emission reductions required from the electric sector. On the other hand, allocating fewer allowances would unnecessarily increase compliance costs and electricity prices without any environmental benefit.
- Because much of this cost burden will be borne by electricity consumers in coal-dependent states, GCA believes that a mandatory climate change program would not be politically sustainable without a substantial allowance allocation (e.g., 95%) to mitigate the impact of compliance costs and higher electricity prices.
- Additional modeling at the national, regional and state level is essential to understanding impacts and allowance allocations.
- In order to be as helpful as possible, it is GCA's intention to develop and provide additional information and analysis regarding the point of regulation issue.

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Question 1. Point of Regulation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

- **Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?**

The individual members of GCA hold different views regarding mandatory climate change measures.¹ Some companies do not support mandatory measures because of economic and other concerns, while other companies believe that reasonable mandates are acceptable. Nonetheless, because of the energy, economic and competitive implications of mandatory greenhouse gas (GHG) reduction measures, GCA believes it is prudent and responsible to provide technical and policy input regarding the framework and design elements of climate change legislation. Thus, the premise for GCA's comments is that, if Congress were ever to enact climate change legislation that mandates limits on GHG emissions, such legislation should be carefully crafted to accomplish its objectives with minimal adverse consequences.

As analysis below demonstrates, the cost of a mandatory program to limit carbon dioxide (CO₂) emissions from fossil-fired power plants would be substantial. Based on preliminary GCA and NCEP staff analysis, it appears that compliance costs for fossil-fired generation due to an NCEP-type program would be roughly \$200 billion over a 10-year period.² These costs would be translated into higher electricity prices. However, costs could be reduced significantly by providing an adequate allowance allocation for fossil-fired electricity generators. In GCA's view, an adequate allowance allocation is a necessary precondition for regulating CO₂ emissions because compliance costs are directly affected by allowance allocations. We provide the results of analysis to demonstrate why an adequate allowance allocation is absolutely essential to mitigating compliance costs and electricity price increases.³ At the same time, this analysis clearly shows that an auction would dramatically increase compliance costs. For that reason, GCA opposes any auction of allowances, although a small set-aside for new units might be appropriate. The analyses are based on the framework of the NCEP climate change recommendations.⁴ Our comments are not intended to imply GCA support for a mandatory program that applies to only the electric power sector.

It is important to recognize that allowance allocations under a fixed cap do not affect the stringency of the reduction obligation under the program. A smaller allowance allocation does

¹ GCA is comprised of nine companies: Allegheny Energy, American Electric Power, Cinergy, DTE Energy, PNM Resources, PPL Corporation, PacifiCorp, We Energies, and Xcel Energy. Collectively, these companies own/operate, directly or through subsidiaries, approximately 110,000 MW of generating capacity. About 70% of this capacity is coal-fired, which constitutes approximately 20% of U.S. coal-fired generating capacity.

² NCEP staff used NEMS modeling results to estimate increased fuel costs of \$12.2 billion in 2010, \$18.7 billion in 2015 and \$22.7 billion in 2020. GCA estimates, based on a different methodology, are consistent with the NCEP staff estimates. Based on those figures, we have estimated that compliance costs would be roughly \$200 billion over this period.

³ GCA has offered its view on point of regulation in response to Question 1, stating that, to the extent point of regulation affects allowance allocations, we would prefer the point of regulation that results in the full allocation of allowances to fossil-fuel fired generators and, therefore, the lowest compliance costs and electricity price increases.

⁴"Ending the Energy Stalemate. A Bipartisan Strategy to Meet America's Energy Challenges," National Commission on Energy Policy, December 2004.

Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

not reduce emissions but increases compliance costs. Conversely, a larger allocation lowers compliance costs but does not lessen the stringency of the mandatory program.

EIA Modeling

EIA conducted macroeconomic modeling of the NCEP climate change recommendations.⁵ The modeling compares the effects of the NCEP-recommended program (with a \$7/metric ton safety valve permit price) to a business-as-usual (BAU) reference forecast for 2015 and 2025. For example, EIA projected some of the following changes:

- Electricity prices increase above the reference case by 3% in 2015 and 4% in 2025.
- Average household energy expenditures increase by 2% in 2015 and 3% in 2025.
- Coal prices are 50% higher in 2015 and 58% higher in 2025.
- Coal-fired generation decreases by 2% in 2015 and 11% in 2025. (Relative to 2003 levels, coal-fired generation still increases 14% by 2015 and 31% by 2025.).
- GDP declines by slightly more than 0.1% in both 2015 and 2025.

Exhibit 1 provides additional modeling results. (Please see Exhibit 1_Generators for Clean Air.) Compared to BAU projections, some of the effects appear relatively modest on a macroeconomic scale; others are more significant. Nonetheless, it is critical to bear in mind that the modeling results are based on a very important assumption regarding allowance allocations:

*Most of the permits (95 percent initially, gradually declining to 90 percent between 2013 and 2022) would be allocated at no cost; the Federal Government would auction the remainder.*⁶

This means that, in order to assure that the macroeconomic impacts of an NCEP-type program remain within the bounds of the EIA projections, 95% of the allowances needed for compliance by electricity generators (and other sectors) would have to be allocated at no cost.⁷ As GCA analysis below indicates, the nationwide cost for electricity generators to comply with a program that provides a 95% allowance allocation is still likely to average roughly \$1 billion annually.

In addition, EIA's macroeconomic results do not provide any insight into the impacts on states that rely on coal-fired generation. If a smaller number of allowances (less than 95%) were allocated to electricity generators, the impacts would be greater than the results projected by EIA and would be especially serious in states that are dependent on coal. In 2003, for example, 28 states obtained more than 50% of their electricity from coal. Exhibit 2 provides a list of states that rely heavily on electricity from coal. As legislation takes shape, it would be helpful to conduct additional modeling in order to understand the impacts on coal-dependent states.

⁵ "Impacts of Modeled Recommendations of the National Commission on Energy Policy," SR/OIA/2005-02, Energy Information Administration, April 2005.

⁶ "Impacts of Modeled Recommendations of the National Commission on Energy Policy," SR/OIAF/2005-02, EIA, page 2.

⁷ As a reference point, the SO₂ trading system established by the 1990 Clean Air Act Amendments allocates 97.2% of allowances to existing electric generating units (EGUs). The balance is sold through an auction each year with the proceeds returned to existing EGUs.

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Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

GCA Analysis

GCA analyzed two scenarios to illustrate the significant difference between an auction and an allocation approach. Specifically, we compared a 100% auction to a 95% allowance allocation under an NCEP-type program in 2015 for fossil fuel-fired generation. Our calculations show that an auction would result in compliance costs 20 times greater than the costs of a 95% allowance allocation.

- **Scenario 1 (Auction) \$19.3 billion**

No allowances are allocated to fossil generators. As an upper bound on costs, we assumed that all allowances must be purchased at auction \$7 per metric ton.⁸ If 100% of allowances have to be purchased by fossil generators, the nationwide compliance cost is estimated at slightly more than \$19 billion in 2015.

- **Scenario 2 (95% Allocation) \$966 million**

If 95% of allowances needed for compliance are allocated to fossil generators, the nationwide compliance cost for the power sector would be close to \$1 billion in 2015. A 95% allocation is consistent with EIA's assumption about allowance allocations.

Our estimates above are based on simplifying assumptions and are intended to illustrate the effect of two dramatically different allowance allocation scenarios for the electric power sector. We used natural gas and coal consumption projections for the electric power sector taken from the AEO2005 reference case which projects the use of 1.075 billion metric tons of coal and 8.39 trillion cubic feet of natural gas in 2015. These quantities translate into approximately 2.3 billion metric tons of CO₂ from coal combustion and 460 million metric tons of CO₂ from combustion of natural gas.⁹ We assumed an allowance price of \$7 per metric ton as an upper bound on costs.¹⁰ Using the same methodology, the compliance costs in 2015 would be roughly \$2 billion if the allocation were 90%, \$4.8 billion if the allocation were 75% and \$10 billion if the allocation were 50%.

GCA also conducted similar analysis to illustrate the effect of allowance allocations under the same two scenarios on three states that are heavily dependent on coal-fired generation.¹¹ In

⁸Although we make the simplifying assumption that allowances equal to CO₂ emissions must be "purchased," in reality, emission reductions could be achieved in a number of ways that would not require the outright purchase of allowances but would still entail some cost.

⁹ GCA's analysis used emission coefficients from EIA's "Voluntary Reporting of Greenhouse Gases" to calculate CO₂ emissions from coal and gas combustion.

¹⁰ The NCEP recommendation included a \$7 per metric ton safety valve permit price (nominal 2010\$). EIA modeling projects that the safety valve price would not be reached until 2016. The GCA analysis simply assumes that allowances would cost the safety valve price in 2015. Obviously, if allowances sold for less than \$7 per metric ton, the cost estimates above would be proportionately less. However, there would still be a dramatic difference in compliance costs between the two scenarios.

¹¹ Lacking state-specific projections for 2015, GCA used coal consumption data for 2003 to estimate costs. Because coal consumption would be expected to increase significantly by 2015, the figures above underestimate compliance costs in later years.

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Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

2003, Indiana obtained 97% of its electricity from coal-fired generation, Ohio 93%, and New Mexico 90%. The difference in compliance costs is shown in the table below.¹²

	Scenario 1 (Auction)	Scenario 2 (95% Allocation)
Indiana	~ \$1 billion	~ \$50 million
Ohio	~ \$1 billion	~ \$50 million
New Mexico	~ \$200 million	~ \$10 million

These estimates show the same dramatic effect of an auction compared to an adequate allowance allocation.

NCEP Staff Estimates

NCEP staff used NEMS modeling results to estimate the electricity sector's increased fuel costs and revenues as a result of the NCEP climate change recommendations. In general, these higher fuel costs will be either passed on to end users through higher electricity prices or be absorbed by electricity generators, adversely affecting their financial health. The table below summarizes estimates of (1) increased fuel costs resulting from an NCEP-type program; (2) increased fuel costs that would not be passed through; and (3) the increase in fuel costs that would be passed through and, therefore, increase electricity prices. Even if some of the increased fuel costs are not passed through to end users, the costs that are passed through would still be significant.

	Increased Fuel Costs	Costs Not Passed Through	Costs Passed Through
2010	\$12.2 billion	\$4.2 billion	\$8 billion
2015	\$18.7 billion	\$5.7 billion	\$13 billion
2020	\$22.7 billion	\$7.9 billion	\$14.8 billion

¹² Although New Mexico obtains a large percentage of its electricity from coal, the amount of coal used in the state and the level of CO₂ emissions are less than for Indiana and Ohio. Therefore, New Mexico's compliance costs are significantly less but, at the same time, are imposed on a smaller base of ratepayers.

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The estimates show that compliance costs would be substantial and that an adequate allowance allocation would be necessary to reduce compliance costs (both costs passed through and not passed through) to a politically acceptable level. This would be especially true in states that rely on coal-fired generation.

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2a:

Technology R&D and Incentives

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2b:

Adaptation Assistance

- **What portion of the overall allowance pool should be dedicated to adaptation research or adaptation-related activities?**
- **How should these allowances or funds be administered?**
- **What is the appropriate division between federal vs. regional, state, and local initiatives?**

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2c:

Consumer Protections

- **What portion of the overall allocation pool should be reserved to assist consumers?**
- **Should funds from the sale of permits or allowances be targeted primarily to low-income consumers, or should they be more widely distributed to benefit all consumers?**

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2d:

Set-Aside Programs

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2e:

Special considerations for fossil-fuel producers?

- **Would some upstream fossil fuel producers be unable to pass the cost of purchasing permits or allowances through in fuel prices if they are the regulated entity?**
- **Is there a sufficient policy rationale for addressing these costs to justify the complexity of setting up and administering an allocation system for these entities?**
- **What other options exist to address the inability of fossil fuel producers to pass through these costs?**

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2f:

Allocations for downstream electric generators?

- **Should electricity generators be included in the allocation if they are not regulated? (Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)**

The individual members of GCA hold different views regarding mandatory climate change measures.¹³ Some companies do not support mandatory measures because of economic and other concerns, while other companies believe that reasonable mandates are acceptable. Nonetheless, because of the energy, economic and competitive implications of mandatory greenhouse gas (GHG) reduction measures, GCA believes it is prudent and responsible to provide technical and policy input regarding the framework and design elements of climate change legislation. Thus, the premise for GCA's comments is that, if Congress were ever to enact climate change legislation that mandates limits on GHG emissions, such legislation should be carefully crafted to accomplish its objectives with minimal adverse consequences.

Yes. Coal-fired generation is projected to incur costs of over \$50 billion (net present value) over the next two decades to comply with the recently promulgated Clean Air Interstate Rule, Clean Air Mercury Rule, and Clean Air Visibility Rule. Other clean air requirements (federal and state) may necessitate additional compliance expenditures by coal-fired electricity generators over the same time period. Mandatory restrictions on carbon dioxide (CO₂) would require significant compliance costs in addition to expenditures already necessary to meet clean air requirements. Therefore, it is imperative that Congress allocate adequate allowances to fossil-fired generation to reduce the costs of complying with climate change requirements. This is the most effective way to minimize the impact of a mandatory climate change program on coal-dependent states and energy intensive industries. Because of the additional compliance costs that would result from a mandatory GHG reduction program, we urge that Congress give consideration to mechanisms requiring automatic pass through of increased fuel and other costs necessary to comply with the program.

Nuclear generation should not receive allowances because it will benefit competitively and financially from the increased cost of fossil fuels due to greenhouse gas restrictions. Nuclear generation will *not* have to pay the higher compliance costs that fossil-fired generators and their customers will experience. Only fossil generation will incur compliance costs under either an upstream or downstream system. EIA's analysis projects that, under the NCEP-recommended approach, coal prices would increase by 50% in 2015 and 58% in 2025. Natural gas prices are also projected to increase but not as dramatically: 5% in 2015 and 8% in 2025. Under an upstream system, fossil generation will bear the burden of these higher fuel costs and, therefore,

¹³ GCA is comprised of nine companies: Allegheny Energy, American Electric Power, Cinergy, DTE Energy, PNM Resources, PPL Corporation, PacifiCorp, We Energies, and Xcel Energy. Collectively, these companies own/operate, directly or through subsidiaries, approximately 110,000 MW of generating capacity. About 70% of this capacity is coal-fired, which constitutes approximately 20% of U.S. coal-fired generating capacity.

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should receive an allowance allocation adequate to mitigate the impact of increased fuel costs and electricity prices.

NCEP staff used NEMS modeling results to estimate the fossil fuel sector's increased fuel costs and revenues as a result of the NCEP climate change recommendations. Under an upstream system, higher fuel costs would be either recovered through higher electricity prices or be absorbed by electricity generators who are not able to fully recover the fuel costs. The table below summarizes estimates of (1) increased fuel costs resulting from an NCEP-type program; (2) increased fuel costs that would not be passed through; and (3) the increase in fuel costs that would be passed through and, therefore, increase electricity prices.

	Increased Fuel Costs	Costs Not Passed Through	Costs Passed Through
2010	\$12.2 billion	\$4.2 billion	\$8 billion
2015	\$18.7 billion	\$5.7 billion	\$13 billion
2020	\$22.7 billion	\$7.9 billion	\$14.8 billion

Even if some of the increased fuel costs are not passed through in higher electricity prices, the costs that are passed through would still be substantial. These estimates demonstrate that an adequate allowance allocation would be necessary to reduce overall compliance costs (both costs passed through and not passed through) and electricity price increases to a politically acceptable level.¹⁴ This would be especially true in states that rely on coal-fired generation. GCA analysis provided elsewhere in response to questions demonstrates that a substantial allowance allocation (95%) would reduce compliance costs and electricity price increases to a more feasible level.

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¹⁴ Preliminary NCEP staff analysis suggested that an allowance allocation equivalent to 60% of emissions would be necessary to compensate the fossil-fuel generating sector for "lost profits" (i.e., increased fuel costs that cannot be passed through to end users) under an upstream system. Under this scenario, electricity generators were assumed to sell the "lost profit" allowances to regulated entities. This is a different purpose than surrendering allowances to demonstrate compliance if electricity generators were regulated.

Question 2. Allocation

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- **What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?**

GCA supports allocating allowances to the electric power sector based on the sector's pro rata share of historic GHG emissions. Allocating an adequate number of allowances (i.e., a pro rata share) to the sector is necessary to mitigate the disproportionate impacts on states and electricity consumers that rely on coal-fired generation. Furthermore, GCA supports allocating these allowances to fossil fuel-fired generators within the electric power sector because fossil fuel-fired generation will incur all the electricity sector's compliance costs and non-emitting generation will gain financially through higher electricity prices.

- **Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?**

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- **How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?**

Some allowance allocation formulas penalize coal-fired generation which would already bear most of the compliance cost burden under a mandatory climate change program. In the past, GCA has analyzed various allocation formulas based on emissions levels, heat input, and electricity output, and the inclusion or exclusion of non-emitting generation. Our analysis has shown that (1) certain allocation formulas can markedly increase compliance costs for coal-fired generation, and (2) using either historic emissions or heat input would be the most equitable way to allocate allowances in order to avoid penalizing existing coal-fired generation. In addition to the effect of allocation formulas on compliance costs, any program that relies on an auction would also increase compliance costs unnecessarily without any environmental benefit.

In the past, GCA analyzed Senator Carper's multi-pollutant legislative proposal that would cap CO₂ emissions from fossil fuel-fired electric generating units at 2001 levels by 2013. Under the proposal, allowances are allocated based on pro rata share of electricity generated (output) by each generating unit. Basing allowance allocations on output treats all fuels as though they have

the same carbon dioxide (CO₂) emissions rate even though they do not. The average emission rate for coal is 208 pounds of CO₂ per million Btu, natural gas is 117 pounds of CO₂ per million

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Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Btu, and nuclear and renewables emit no CO₂. For that reason, an output-based allocation results in an allowance windfall for non-coal generation and short changes coal-fired generation. The economic value of the windfall is in addition to the increase in the asset value of non-emitting generation (particularly nuclear) that would result from CO₂ limits on fossil fuel-fired generation. GCA estimated that Senator Carper's proposal could impose as much as a 30% economic penalty on coal-fired generation in 2015 and 2020. That is, coal-fired generation would receive an allowance allocation 30% less than it should receive based on a more equitable allocation (e.g., based on heat input). The economic value of any such penalty would depend on the level of the emissions cap and other factors. In the case of Senator Carper's proposal, GCA estimated that the economic penalty to coal-fired generation nationwide would be roughly \$3 billion in 2015 and 2020.¹⁵ As would be expected, states that rely on coal would be penalized the most. For example, one GCA company estimated that Indiana and Kentucky would be penalized by approximately \$200 million annually.

While Senator Carper's proposal is different from the approach recommended by the NCEP, it nonetheless illustrates how coal-fired generation could be penalized by allocating allowances based on electricity output and by providing allowances to nuclear generation.¹⁶ Further analysis would be necessary to determine the size of any economic penalty under an NCEP-type approach if allowances were allocated on the basis of output and non-emitting generation were included in the allowance allocation.

¹⁵ At the time of the analysis, GCA assumed an allowance price of \$5 per short ton.

¹⁶ The Carper proposal would allocate allowances to "incremental" nuclear generation and to renewables. Incremental nuclear generation means the increase in output since 1990 from nuclear generating units.

Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2g:

Allocations for energy-intensive industries?

- Is there a sufficient policy rationale to have an allocation to selected energy-intensive industries? What industries should be included in the allocation?
- What portion of the overall allocation framework should be reserved for these industries?
- What are the appropriate metrics for determining allocations across different industries?

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Question 2. Allocation

Submitter's Name/Affiliation: Paul Bailey on behalf of Generators for Clean Air

Clarifying Questions 2h:

Allocations to other industries/entities?

- **What other industries/entities (e.g. agriculture, small businesses, etc.) should be considered in the allocation pool?**
- **What should be the basis for their share of the total allocation as well as for the distribution among such industries/entities?**

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Exhibit 1 -- EIA Modeling of NCEP Climate Change Recommendations
Based on 95% Allowance Allocation At No Cost⁴

	2015					2025		
	2003	Reference ¹	NCEP ²	Change		Reference	NCEP	Change
Electricity price (cents/kWh)	7.4	6.9	7.1	+ 3%		7.3	7.6	+ 4%
Natural gas price (\$/mcf)	6.86	5.92	6.24	+ 5%		6.59	7.13	+ 8%
Coal price (\$/mmBtu)	1.30	1.25	1.87	+ 50%		1.32	2.08	+ 58%
Household energy costs (\$)	1582	1496	1526	+ 2%		1571	1618	+ 3%
New coal capacity (GW) ³	N/A	8.3	3.5	- 58%		86.9	43.2	- 50%
Coal-fired generation (Bkwh)	1970	2305	2248	- 2%		2890	2577	- 11%
Gas-fired generation (Bkwh)	632	1173	1189	+ 1%		1406	1542	+ 10%
Nuclear (Bkwh)	764	826	826	--		830	830	--
Renewables (Bkwh)	359	447	460	+ 3%		489	608	+ 24%

¹ Reference means EIA business-as-usual projections for 2015 and 2025 based on AEO2005.

² NCEP climate change recommendations, including the \$7/ton safety valve permit price.

³ Figures represent new conventional coal plus IGCC.

⁴ Selected results from Table B1, "Comparison of Individual Policies" from "Impacts of Modeled Recommendations of the National Commission on Energy Policy," EIA, April 2005.

**Exhibit 2 – States That Rely Heavily on Coal-Fired Electricity
(Percentage of Electricity Generated from Coal in 2003)¹**

1. West Virginia	99%
2. Indiana	97%
3. Wyoming	97%
4. Utah	95%
5. North Dakota	94%
6. Ohio	93%
7. Kentucky	92%
8. New Mexico	90%
9. Missouri	85%
10. Iowa	85%
11. Colorado	81%
12. Kansas	76%
13. Wisconsin	72%
14. Nebraska	69%
15. Michigan	67%
16. Minnesota	66%
17. Montana	66%
18. Georgia	66%
19. Oklahoma	63%
20. Tennessee	60%
21. North Carolina	59%
22. Alabama	58%
23. Delaware	58%
24. Maryland	58%
25. Nevada	57%
26. Pennsylvania	56%
27. Texas	51%
28. Arkansas	50%
29. Virginia	48%
30. Illinois	46%
31. Mississippi	44%
32. South Dakota	43%
33. Arizona	41%
34. South Carolina	40%

¹ “1990-2004 Net Generation by State by Type of Producer by Energy Source (EIA-906).” Energy Information Administration, 2006.

National Mining Association

Submitter's Name/Affiliation: Craig Montesano/National Mining Association

Contact: Craig Montesano

Email: cmontesano@nma.org

Phone: (202) 463-2663

A forward-looking energy policy is the foundation upon which the United States must build any strategy for addressing climate change. Indeed, a basic question has emerged in the wake of Hurricane Katrina and other events that have demonstrated the limits of existing U.S. energy production capabilities: how will America meet its energy needs over the next 50 years? Visionary leadership is needed to propel U.S. energy policy beyond the Energy Policy Act of 2005, which was a crucial first step in responding to our growing energy needs. Looking ahead, a coherent climate strategy must incorporate the provisions of the Energy Policy Act and embrace the role of new technology, support the need for energy independence and maintain U.S. economic competitiveness in an increasingly challenging world economy.

The National Mining Association (NMA) has adopted a sustainable development policy and believes that the United States can best develop its climate policies based upon the tenants of sustainable development. This requires that climate policies be developed while considering their effect on the nation's policies involving energy, economic competitiveness, national security, agriculture, labor, transportation, immigration, social security, housing and other environmental and social policies.

Conceptually, the United States can best develop its climate policies based upon the tenants of sustainable development. As such, the ramifications of climate policies cannot be viewed in a vacuum. They must be formulated and evaluated based on their effects on energy supply and costs, economic competitiveness, national security, agriculture, labor, transportation, immigration, social security, housing and other environmental and social policies. Because climate policies can touch on all aspects of the economy, they can only be successful if they are developed using the best elements of democracy - an open and transparent debate, sound facts and careful consideration of the needs of all Americans.

Economic growth will necessarily be accompanied by an increase in energy demand. The International Energy Agency's *World Energy Outlook* projects economic growth to average 3.2 percent annually over the next 25 years, with a much faster growth rate expected in countries such as China and India. The use of fossil fuels and other energy sources will increase apace. However, by advancing more efficient and cleaner technologies to improve coal combustion and conversion of coal to other energy forms, economic advances will occur, fewer scarce energy resources will be consumed, and more secure energy supplies will be available to the United States than would otherwise be the case.

NMA supports policies that embrace innovative measures to reduce greenhouse gas emissions intensity while at the same time promoting a sound economy, job creation and a reliable energy supply. To do otherwise increases our unsustainable reliance on imported oil, overlooks the overwhelming emissions projections of developing nations, and undermines our ability to successfully compete with fast-growing economies in the decades ahead.

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Submitter's Name/Affiliation: **Craig Montesano/National Mining Association**

Who is regulated and where?

The National Mining Association (NMA) believes Question 1 unnecessarily limits the discussion to an artificial consideration of “winners” and “losers,” and does so under a system plagued by inefficiencies that is proving to be unworkable wherever it has been enacted. Instead of becoming mired in a debate over the limitations of a fundamentally flawed regulatory approach, the committee should, instead, characterize the discussion in terms that point to the opportunities for the future. Indeed, in considering emissions policy in the larger context of how America will meet its energy supply needs over the next 50 years, the committee should be guided by the need for and challenges of *energy security, technology development* and *U.S. competitiveness*.

In the decades ahead, the United States will face a host of challenges: a growing population, increased energy demand, and economic competition from abroad. In 2005, these challenges – and the enormous complexities of maintaining a stable and affordable domestic energy supply – were thrust into the spotlight by Hurricane Katrina and related events. In this post-Katrina environment, policymakers must consider an emissions policy in the larger context of energy demand and supply and our desire to maintain a thriving economy. Hurricane Katrina exacerbated America's festering energy problems; policies that unnecessarily boost consumer prices, restrict full use of abundant domestic fuel sources such as coal, and increase America's dependence on foreign energy producers. These policies must be discarded.

NMA, representing America's coal producers, has risen to the challenge of powering America's future with an energy source that is clean, abundant, affordable and stable. One unit of coal-fired power produced today emits on average of 13 percent less carbon dioxide than in 1995. Coal is on the cusp of technological innovations that make it the clean energy source of choice to power America's future. Coal-to-liquid, coal-to-gas and other clean coal technology advancements offer a suite of choices for synthetic fuels and clean electricity generation that will help America become energy self-sufficient and economically prepared for the competitive challenges posed by the nations of East Asia and the Pacific Rim.

Recognizing that addressing climate change requires a long-term technology-based approach, NMA advocates advancing a number of steps to place coal at the center of a clean energy agenda. Policies should not focus on mandatory systems, but should include incentives, funding and removal of barriers for:

- A suite of clean coal technologies, including advanced pulverized coal and integrated gasification combined cycle technologies and liquefaction.
- The FutureGen initiative that will develop technology capable of achieving near “zero emissions” from coal fueled generating plants.
- Technologies that improve carbon reduction, including a range of renewable and fossil fuel energy sources.
- Technologies that improve energy efficiency across all sectors, including buildings, appliances and other energy-consuming equipment and transportation, including large mobile equipment.

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- Technologies effective in reducing, capturing and sequestering carbon dioxide emissions from existing and future sources.

It is important to emphasize that the committee took a historic step towards an energy-efficient climate policy with the passage of the Domenici-Barton Energy Policy Act of 2005. Among other key low-emissions provisions, the act contained language on coal gasification, carbon sequestration and efficiency improvements, which could allow coal to be used to generate carbon-free or low-carbon electricity. If fully funded and implemented, Domenici-Barton will increase the market trend of emissions reduction with continued economic productivity and will enhance America's domestic base of stable energy supply. NMA believes the committee is now poised to take the next step by focusing on the crucial question of how America will get its energy in the decades ahead and lead the world with a dynamic climate change policy. By doing so, it will most effectively address Senate interest in the issue of climate change.

The assumptions underlying a question like "who is regulated and where?" prevents the consideration of a wide variety of options, and leads NMA to restate its opposition to mandatory caps on greenhouse gas emissions and trading systems, or caps on the production of various forms of energy. Our primary concerns about mandatory policies are their impact on America's most abundant and valuable domestic resource—coal—as well as other negative consequences on the economy as a whole, due to increased costs of energy.

Energy Information Administration (EIA) statistics for electricity use over the past thirty years – as well as projections for the next twenty-five – demonstrate the inadvisability of restricting coal-based generation. Since 1970, overall electricity demand in the United States increased 136 percent, with demand projected to increase another 36 percent by 2020.

A mandatory program – whether in the form of an upstream regulatory system or carbon tax (even if it included a "safety valve") would ration coal use at the expense of low-cost electricity. EIA's March 2006 analysis, "*Energy Market Impacts of Alternative Greenhouse Gas Intensity Reduction Goals*," shows the use of affordable domestic coal would be lower by 74 to 397 million tons in 2020 than reference case and between 274 and 1,081 million tons lower than reference case in 2030 under a cap and trade system with the exact amount dependent on the level of intensity goal and safety valve price. The price of coal would be 51.9 percent to 156.7 percent higher in 2020 and from 57.4 percent to 305.6 percent higher in 2030. Needless to say, this program would impair the United States' ability to use more domestic energy resources, thus eliminating the goal of reduced dependence on foreign energy. Further, the compliance costs of this type of program would eat into research and development funding and hamper the ability of corporations to invest in next-generation technologies such as coal-to-liquid conversion. In addition, stranded investment in coal plants would become a major burden to electricity consumers and prompt fuel switching to natural gas. Given the current geopolitical situation – and in particular, the hostility of petroleum-producing nations such as Venezuela – this would be a disastrous situation for the United States.

According to EIA forecasts, natural gas prices at the well head will increase to \$5.92 per mcf by 2030 (in 2004 dollars). The average cost of natural gas delivered to the utility will increase to

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\$6.41 and to the residential consumer to \$11.67 by 2030. "Growth in liquefied natural gas (LNG) imports, Alaskan production, and lower-48 production from unconventional sources," stated EIA Deputy Administrator Howard Gruenspecht on February 9, 2006, "is not expected to be large enough to completely offset the impacts of resource depletion and increased demand in the lower-48 States." If natural gas prices will not fall again to 1990s levels, and if inadequate domestic supplies will not meet projected demand, it follows that reliance on imported natural gas presents serious problems for United States energy independence.

A "Mandatory market-based system" seems to be a contradiction in terms. A *mandatory* system assumes government regulation and/or control, while a *market-based* system presupposes changes or desired effects driven by free-market forces. The probability of unending technical problems and inherent uncertainties that comes with the enactment of a mandatory system cannot be underestimated. NMA holds the position that voluntary market forces, not government controlled mandates, are and must continue to be the major driver of greenhouse gas reduction.

Recent statistics help make the case for this argument. Kyoto Protocol signatories are showing tepid progress at best in achieving their binding targets. Nine of the EU-15 nations (Belgium, Greece, Italy, Ireland, Denmark, Portugal, Austria, Finland and Spain) are above their 1990 levels for carbon emissions, while six others (Luxembourg, Britain, Sweden, Germany, France and Netherlands) are below. Taken as a whole, the EU-15 is 1.9 percent above Kyoto targets. Canada is 24 percent above its 1990 CO₂ levels.

Great Britain – which relies primarily on natural gas and nuclear power to meet its domestic and Kyoto Protocol targets – reported a 0.5 percent increase in CO₂ emissions in 2004 compared to 2003. This poses a fundamental problem for a nation that set a 20 percent domestic carbon dioxide emissions reduction goal by 2010. Even while its government assesses how to get back on track for its goal, some in Britain seem ready to put aside mandatory efforts. The House of Lords Economic Affairs Committee, in a July 6 climate change policy report, stated

We consider that the "beyond Kyoto" negotiations, which start this year, will have to take a far more innovatory approach than simply assuming that the Kyoto targets will be tightened. The U.S. has repeatedly stressed the role of technological change in securing greenhouse gas emission reductions. While the Kyoto Protocol should, in principle, encourage technological change, we are not convinced that it has sufficient focus on this central issue. We argue that the present "more of the same" approach, relying exclusively on targets for emissions reductions, may not tackle the global warming threat. We urge the Government to help broaden the debate . . .

Significantly, the Lords added that, "It is very important that a realistic picture of the likely costs be conveyed to, and understood by, people today who will have to pay them." This is an instructive statement for United States policymakers in the post-Katrina age.

Emissions statistics, when matched with economic data, show the effectiveness of market policies in contrast to the Kyoto Protocol's mandatory approach. U.S. emissions intensity is

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falling dramatically. The latest EIA statistics for 2004 show a 2.6 percent drop in emissions intensity and a 22.5 percent decline from 1990 to 2004. Overall emissions figures are also encouraging: U.S. economic growth since 1970 increased 187 percent, while air pollution decreased 54 percent. During this same period, the U.S. saw a population rise of 40 percent and a 47 percent increase in energy use. From 2000 to 2003, U.S. greenhouse gas emissions growth of 1.8 percent was outpaced by its economic growth of 4.2 percent.

As producers and users of energy, many NMA members are taking steps to improve the energy efficiency of their operations as well as investing in the development of new cleaner, energy efficient technologies. NMA members will continue efforts to improve energy efficiency; to improve efforts to capture coal bed methane, where appropriate; and to participate, as appropriate, in U.S. led international initiatives. In doing so, NMA members remain committed to the principles of sustainable development and to the integration of social, environmental and economic principles in our mining operations from exploration through development, operation, reclamation, closure and post closure activities.

Given the unsustainable reliance on foreign sources of energy, the overwhelming emissions projections of developing nations, as well as the need for the United States to successfully compete with these nations in the decades ahead, NMA supports forward-looking policies embracing innovative measures that reduce greenhouse gas emissions intensity while at the same time promoting a sound economy, job creation and a reliable energy supply.

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Submitter's Name/Affiliation: **Craig Montesano/National Mining Association**

Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

The importance of technology is recognized in this question; however, the answer is not in an unwieldy mandatory allowance program that automatically creates winners and losers. The answer does not lie in making expensive energy even more expensive. The answer lies in using less energy to produce more – and that means the nation must support research, demonstration, and widespread commercialization of technologies that enable the use of all energy, and specifically, the clean and efficient use of domestic coal.

A realistic assessment of the issue of climate change should begin from the premise that the United States must lead the world with a cutting-edge energy policy. This includes development and widespread use of advanced technologies to use energy, and especially coal, more efficiently, resulting in a reduction of greenhouse gas intensities. Advances in energy use technologies will, over the long term, result in the same level of greenhouse gas reductions that a more expensive mandatory system – in terms of cost, regulation and bureaucracy – would bring about.

The United States' annual demand for coal could nearly double to over 2 billion tons by 2025 if current forecasts are realized and new markets for coal gasification and coal-to-liquids develop. Coal is the primary fuel choice for the next generation of electricity, and its share of the total electricity market is forecast to increase from roughly 50 percent today to as much as 54 percent by 2025. In addition, coal gasification and coal-to-liquids technologies are opening promising new markets for coal in the residential, commercial, industrial and transportation sectors. Such coal use will lessen the United States' dependence upon foreign energy sources. It would be counterproductive to our economic goals and our energy security goals to hamper the anticipated increase in domestic fuel use with a burdensome and expensive mandatory, allowance-based system to reduce greenhouse gases.

Technologies utilizing coal to produce electricity, synthetic gas and transportation fuels cleanly and efficiently are available now. With additional research, these technologies will be more efficient in the future. Proper incentives will hasten the wide spread use of these technologies.

The Energy Policy Act of 2005 advances responsible action on climate change within the context of new technologies. Implementing and fully funding the programs authorized by this law will go further toward reducing greenhouse gases – and emissions intensity – than mandatory programs. Coal-specific programs include expansion of the clean coal research and development programs, authorization for advanced coal demonstration programs, and tax incentives for the deployment of advanced coal combustion and gasification technologies. The act also includes funding authorization for carbon sequestration research and demonstration programs needed to bring coal emissions to near-zero. All of these programs and incentives will allow for a greater

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and cleaner use of coal. As such, NMA believes the Energy Policy Act should be allowed to take effect and implemented fully before any consideration is given to mandatory, allowance-based carbon reduction policies.

Natural Resources Defense Council

Submitter's Name/Affiliation: David Doniger, Natural Resources Defense Council

Contact: David Doniger

Email: ddoniger@nrdc.org

Phone: (202) 289-2403

Executive Summary:

- To prevent dangerous global warming and avoid an expensive “slow start/crash finish,” legislation needs to include a long-term declining cap to cut U.S. emissions by 50 percent or more by mid-century. A long-term declining cap opens the door to a new cost-control option – borrowing – that has significant advantages over the safety valve. (additional comments)
- An economy-wide approach should put all significant emitting sectors under a long-term declining cap. Because of the urgency of action, sectoral and state-level approaches should be implemented where progress can be achieved more quickly. The point of regulation should be located midstream, closest to the capital and operating decisions that affect emissions, e.g., power generators, other large energy-consuming and GHG-emitting industries, and refineries. (response to Q1).
- At least half of the allowances should be allocated to reduce program costs for consumers (especially low-income consumers) by incentivizing end-use energy efficiency measures, and other means. Large wealth transfers from consumers to mid- and upstream entities must be avoided. At least one fourth of the allowances should be allocated to incentivize investments in the “big change” technologies needed to significantly reduce emissions. (Q2)
- Five percent of the allowances should be allocated to adaptation assistance and to incentivizing emissions reductions outside the cap, especially by farmers. (Q2)
- We propose allocating allowances for the electric sector and gas sector to distribution entities on behalf of their customers, with requirements to invest in end-use efficiency and provide consumer rebates, especially for low income consumers. (Q2)
- The safety valve is a serious impediment to U.S. participation in international trading systems. The safety valve would lead to flooding the world market with newly-minted U.S. allowances, leading to far less emission reduction than anticipated even under the NCEP recommendations. (Q3)
- U.S. leadership is critical. Other countries are unlikely to act on the necessary scale if the U.S. does not lead. We should also recognize that key developing countries are *already* taking actions to reduce their global warming emissions growth. There is much to learn and work out as other countries react to a reassertion of American participation and leadership. These factors call for retaining flexibility to flesh out the concept of “comparable action” based on experience as it unfolds between now and the first review of the U.S. program. (Q4)

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Who is regulated and where?

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Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

NRDC agrees that all sectors and activities that contribute substantially to emissions of global warming pollution need to be subject to mandatory emission limits to slow, stop, and reverse U.S. emissions growth. We favor an economy-wide approach that puts the major emitting sectors and activities under a declining cap.

The cap should cover CO₂ emissions from electricity, transportation, and fossil fuel use in industry and buildings. It should also cover industrial and other sources (such as landfills) of the global warming pollutants other than carbon dioxide (including methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride) rated in carbon equivalent terms.

Our priority is on achieving the earliest possible action. So while we support an economy-wide approach, we also support sectoral – and state-level – approaches to the extent that progress can be achieved more quickly.

- For example, since the power sector represents 40 percent of total U.S. CO₂ emissions, we have supported legislation to reduce power sector CO₂ emissions while enhancing and strengthening current Clean Air Act requirements for other pollutants.
- Since passenger vehicles represent nearly 20 percent of total U.S. global warming emissions, NRDC supports California's clean car standards, which have been adopted to date by California and 10 other states covering 1/3rd of the nation's vehicle sales.
- NRDC supports federal oil savings legislation (e.g., S.2025, sponsored by Sens. Bayh, Brownback, and others) because it would significantly reduce oil-related global warming pollution as it reduces our nation's dangerous oil dependence.
- NRDC has helped in the development of the Regional Greenhouse Gas Initiative (which currently includes seven northeastern states) and we are engaged in the state-wide programs to limit global warming pollution under development in California and other western and southwestern states.
- NRDC supports other complimentary state and federal programs, such as renewable portfolio standards and energy efficiency programs operating under public benefit funds.

Sectoral and state-level cap-and-trade programs can be designed with workable linkages to facilitate inter-sectoral trading. For instance, trading should be easily workable between sectoral programs that denominate allowances in tons. (As explained in answer to question 3, however,

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the presence of a safety valve seriously distorts inter-system trading, whether between countries or between sectors or states in the same country.)

Sectoral and state initiatives other than cap-and-trade programs can complement a national cap-and-trade program. For example, sectoral and state energy efficiency programs are extremely effective in bringing down energy demand (more accurately, satisfying energy service demand with less energy), which allows carbon emission caps to be met at lower permit prices and lower overall economic cost.

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Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

As an initial observation, we emphatically agree that the point of regulation and the point of allocation are two separate decisions.

The legislative proposal put forth by Sen. Bingaman last summer proposed to place the point of regulation for coal and natural gas far upstream, at the coal mine and the wellhead. For petroleum, it proposed to put the point of regulation at a “midstream” point, covering refineries and imports of refined product, rather than going fully upstream.

While an upstream system would work, we believe that the objective should be to locate the point of regulation as much as possible in or near the hands of those closest to the capital and operating decisions that affect emissions.

In the power sector, for example, generators manage most of the decisions that affect emissions: what fuel to use, what sources to dispatch, what technology to employ in new plants or in upgrading or replacing existing plants, and often what programs and incentives to offer for energy efficiency investments further downstream. CO₂ emissions from power plants are already comprehensively monitored and reported as part of the acid rain monitoring requirements. Similar reasoning supports a midstream point of regulation for other large energy-consuming and GHG-emitting industries (cement, chemicals, steel, aluminum, etc.).

Coal or natural gas providers, by contrast, are far removed from direct emissions-management decisions. Locating the point of regulation fully upstream would turn the program into purely a price signal for generators and other downstream actors who are more responsible for emissions management.

On the transport side, oil refineries have a role in emissions-management decisions, although a limited one. For example, either directly as investors or as fuel distributors, refineries can play a role in decisions to reduce emissions by expanding biofuels production and distribution.

On the other hand, vehicle manufacturers have a bigger role in emissions-management decisions related to passenger vehicles, trucks, etc. As vehicle designers and marketers, they are in the best position to choose among technologies that can reduce vehicular global warming emissions. As a result, there is great value in setting GHG emissions performance standards for vehicles (the present example being the California standards) or oil savings requirements.

As mentioned above, it is important to adopt complementary energy efficiency and emission reduction policies to deliver energy services with less energy and thereby lower the cost of meeting emission caps.

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Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

A global warming cap-and-trade program will run on “emissions allowances” that are worth hundreds of billions of dollars over the life of the program. Thus, how allowances are allocated is a major public policy decision. The methodology for distributing them is one of the most important design decisions that Congress will make.

The overarching goals of the allocation methodology must be:

- (i) to keep the cost of the program as low as possible for residential, commercial and industrial consumers (especially low-income consumers), by encouraging investment in end-use energy efficiency measures and by avoiding wealth transfers from consumers to upstream entities; and
- (ii) to mitigate costs for firms investing in the technologies needed to significantly reduce emissions in key sectors (e.g., mainstreaming coal gasification and carbon capture in the electric sector; retooling the auto industry to produce hybrids and other low-emitting vehicles; accelerating deployment of renewables (wind, biofuels, solar).

Congress should not use allowances to compensate owners of power plants or other industrial facilities that lose market share to better performing competitors, and Congress absolutely should not use them to provide windfall profits to firms that will increase market share or profitability under a cap-and-trade program or that will pass allowance costs (beyond actual compliance costs) onto their customers, or both.

1. The atmosphere is a public resource.

Emissions allowances represent permission to use the atmosphere for disposal of carbon pollution. The capacity of the atmosphere to absorb carbon is extremely limited. This limited carrying capacity is not a private resource owned by historical emitters. Rather, it is quintessentially a public resource or public trust. Private entities should not have a right to dump harmful pollution in the public's atmosphere for free.

We have framed this discussion in these terms in order to focus on underlying principles, not only means of implementation. Economists generally agree that an auction is the most economically efficient allocation method.¹ A direct government auction of allowances is only one institutional method of implementing the underlying concept that the allowances are a public

¹ See e.g., Terry Dinan, “Shifting the Cost Burden of a Carbon Cap-and-Trade Program,” (Congressional Budget Office, July 2003); CBO, “Issues in the Design of a Cap-and-Trade Program for Carbon Emissions,” (Nov. 25, 2003).

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resource. Another method is to distribute allowances themselves for specifically designated public purposes according to statutorily specified criteria.²

2. *Using emissions allowances to promote investment in energy efficiency critical to achieving ambitious carbon reductions with the least impact on energy prices.*

Analysis and modeling conducted in connection with the northeast states' Regional Greenhouse Gas Initiative (RGGI) indicates that increasing end-use efficiency for customers is the most effective means of reducing the impact of a carbon cap on electricity rates.³ Indeed, this analysis demonstrated that by using a portion of the allowance proceeds to promote efficiency, the states could reduce power sector carbon dioxide emissions by 10% from current levels and at the same time save average customers over \$100 per year on their energy bills.⁴ Reducing demand growth for electricity saves consumers money and lowers the price of allowances, as reducing total fossil generation reduces the size of the allowance price signal needed to achieve compliance with the emissions cap.

A landmark study by the American Council for an Energy Efficiency Economy demonstrated even more dramatic results in the natural gas sector – increasing energy efficiency by 5% could reduce natural gas prices by 20%.⁵ Since natural gas-fired electricity generation is at the margin in many regions, increasing the efficiency of natural gas use in non-electric applications will reduce the impact of a carbon cap on both gas prices and electricity rates.

The California Air Resources Board has demonstrated the same effect in the motor vehicle sector: California's global warming standards for vehicles will provide consumers lower fuel and maintenance costs that more than offset increases in new vehicle costs. Especially if adopted more widely, the result will be to reduce gasoline prices by reducing overall gasoline demand.

3. *Using emissions allowances to promote rapid deployment of "big change" low-emitting technologies is critical to enabling future carbon reductions at reasonable cost.*

In order to prevent dangerous global warming it is essential to begin making meaningful reductions in heat-trapping pollution now and to get on a path toward reducing emissions by 50 percent or more by mid-century. Many analyses demonstrate the need for rapid deployment of

² One mechanism is the Climate Change Credit Corporation proposed in the Climate Stewardship Act. Another example is the public trustee designated to receive allowances under the proposed Clean Power Act.

³ ICF Consulting "RGGI Electricity Sector Modeling Results, Updated Reference, RGGI Package and Sensitivities," September 21, 2005, available at http://www.rggi.org/docs/ipm_modeling_results_9_21_05.ppt; Economic Development Research Group, "Economic Impacts of RGGI Under Proposed SWG Package Scenarios," September 21, 2005 available at http://www.rggi.org/docs/remi_stakeholder_presentation_11_17_05-final.ppt#492.1.

⁴ Economic Development Research Group, "Economic Impacts of RGGI Under Proposed SWG Package Scenarios," September 21, 2005.

⁵ Elliott, Neal R, Anna Monis Shipley, Steve Nadel and Elizabeth Brown, "Impacts of Energy Efficiency and Renewable Energy on Natural Gas Markets," American Council for an Energy Efficient Economy, September 12, 2003.

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clean and low-emitting energy technologies in key sectors such as electricity and transportation, which together make up more than two-thirds of U.S. global warming emissions, in order to achieve the carbon reductions needed under a long-term declining cap at reasonable cost. Although not an exclusive list, the prime candidate “big change” technologies include coal gasification and carbon capture in the electric sector; a range of drive-train and related technologies (including hybrid gas-electric engines) in the auto industry; and renewable energy resources such as wind and solar in the electricity sector, and biomass for both electricity and transportation sectors.

But we face a serious dilemma. We need to start rapid deployment of these “big change” technologies *now* in order to hold down the long-term costs of sharply cutting U.S. emissions, yet it is generally agreed that the initial price signals from feasible cap-and-trade programs will not be sufficient alone to jump-start that deployment. The allowance distribution formula can solve this problem, by incentivizing firms to invest in rapid deployment of these key technologies.

Wherever possible these incentives should be stated in performance terms (such as emissions per megawatt/hour) and implemented through efficient mechanisms (such as a reverse-auction based on energy savings or energy production per allowance awarded or dollar invested).

It is important to note that most of the allowances distributed in this way would go without cost to the same industries that typically seek other forms of “free” allocation, but in proportion to their investments in energy efficiency and low-emitting technologies. Distributing allowances this way is far preferable, for example, to allocating allowances on the basis of historical emissions or energy usage.⁶ But there is no reason to limit support for clean energy investments to incumbents only. Rather, Congress should ensure the allowance value is available to *any* firm – incumbent or new entrant – that can efficiently and effectively carry out investments in energy efficiency and clean energy technology.

We also note that under a long-term declining cap (recommended in our introductory comments and in answer to question 5), these technology incentives would have a much larger and more stable long-term source of funding than will come from the authorizations and tax incentives in the Energy Policy Act of 2005. Technology incentives under this proposal would also be larger and more stable than under the NCEP recommendations or the proposed legislation put forward by Senator Bingaman last year. Furthermore, these incentives could be accomplished without any budgetary impact.

4. *Free allocation of allowances on the basis of historical emissions, energy generation or use, or other historical factors would result in an enormous transfer of wealth from consumers to energy producers.*

⁶ If granted free allowances on a historical basis – or on any basis unlinked to making these investments – there is no guarantee that the firms will use allowance value for those purposes. They may distribute the allowance value to shareholders, or invest in other ventures deemed more profitable than retooling to reduce emissions.

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Economists at the Congressional Budget Office, Resources for the Future (RFF) and other institutions have determined that allocating all emissions allowances to fossil-fuel providers without cost would give those providers an asset worth seven times the cost that that sector could not pass on to mid- and downstream entities, and ultimately to energy consumers. For example, Stanford University and RFF economist Larry Goulder has shown that in an economy-wide upstream cap and trade program, it would take free allocation of only 13% of the allowances to offset the lost profits (or reduced asset values) of fossil-fuel providers, i.e., the program costs that could not be passed on.⁷ Similarly, looking at a mid-stream⁸ program for the electricity sector, Dallas Burtraw and colleagues have shown that it would take free allocation of only 10% of the allowances to offset lost profits or reduced asset values of electricity producers.⁹ The Congressional Budget Office has reached the same conclusion.¹⁰ In the United Kingdom, the government has determined that free allocation of allowances to electric generators has resulted in windfall profits of over \$500 billion.¹¹ Congress should not repeat this mistake.

The claim that industries need to be compensated even for the limited costs they cannot pass on is really quite extraordinary. It is deeply rooted in our legal tradition that when someone – whether an individual or an industry – endangers public health, safety, or the environment by releasing harmful pollution, that individual or industry bears the responsibility for the costs of mitigation. Nearly all of our modern public health, safety, and environmental laws follow this principle: Complying with duly-enacted pollution control laws and regulations is part of the cost of doing business. Some of this cost can be passed on to consumers. But that portion which cannot be passed on is properly absorbed by company shareholders.

The U.S. and other developed countries have uniformly rejected claims from certain OPEC countries that they deserve compensation for lost profits if developed countries curtail their oil use to curb global warming or to enhance energy security. Why should we not take the same view regarding the compensation claims of carbon-intensive fuel providers here at home?

Notably, many of the coal-fired facilities seeking historical allocations have been enormously profitable in recent years due to high gas prices. The government is generally not in the business of ensuring corporate profitability for power plant owners. State and federal regulators do not require coal-fired power plants to return excess profits to customers when high natural gas prices or other factors increase market clearing prices and raise revenues for coal-fired plants; generators get to keep those profits. Similarly, government should not be in the business of requiring consumers to bail out generators who become less profitable under a carbon cap. Such a system would create the worst of both worlds for consumers – they would reap none of the

⁷ Morgenstern et al., “The Distributional Impacts of Carbon Mitigation Policies,” Issue Brief 02-03 (Resources for the Future, Feb. 2002), <http://www.rff.org/Documents/RFF-IB-02-03.pdf>.

⁸ A program focused on electricity producers is often called a “downstream” program. But a true downstream program would apply to electricity consumers. Similarly, a true downstream program for transportation would apply to vehicle owners and operators. We prefer to refer to programs that apply to electricity producers (or oil refiners) as “midstream” programs.

⁹ Morgenstern et al., *supra* note 1.

¹⁰ See note 2, *supra*.

¹¹ House of Commons, Environmental Audit Committee, “The International Problem of Climate Change: UK Leadership in the G8 and EU,” p. 17 (Mar. 16, 2005).

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benefits of a competitive market and continue to shoulder the costs of a regulated market. In a competitive world, businesses cover their up and down risks. Regulatory risks are well known, including the risk of carbon regulation, which has been on the horizon for many years.

For these reasons we do not support using allowances to compensate firms for losses in profitability or asset value under a carbon cap. However, should Congress decide to do this in order to reduce political opposition to global warming legislation, it should carefully tailor its efforts in order to avoid providing windfall profits. Based on the work of RFF, CBO, and others, any allocation to address lost profits or reduced asset values should be limited to less than 15 percent of the total number of allowances.

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Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2a:

Technology R&D and Incentives

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

As indicated in our overview response above, we support allocating at least a quarter of the allowances to stimulate rapid deployment of a suite of technologies that are essential to enabling achievement of immediate carbon emission reductions and a long-term declining carbon cap at least cost. These include key investments in energy efficiency, renewable energy, and low-carbon fossil energy production. We also support allocating a percentage of the allowances to R&D on the next generation of breakthrough technologies.

As noted above, we face a serious dilemma. We need to start rapid deployment of these “big change” technologies *now* in order to hold down the long-term costs of sharply cutting U.S. emissions, yet it is generally agreed that the initial price signals from feasible cap-and-trade programs will not be sufficient alone to jump-start that deployment.

For example, IGCC/CCS deployment requires about \$2 billion/yr in investment on a levelized cost basis. A University of Michigan study for NCEP estimates that capital investments of \$153 million are required for capacity to produce 200,000 hybrids per year (not including engineering costs).¹² This report shows the long-term cost savings, through job retention, of providing incentives to automotive manufacturers and suppliers to re-tool their existing plants to make in the United States hybrid and advanced diesel engines and components that would otherwise be produced offshore.

¹² “Fuel-Saving Technologies and Facility Conversion: Costs, Benefits and Incentives,” Office for the Study of Automotive Transportation, University of Michigan, November 2004.

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Funds on this scale for these and other technologies will not be easily found through tax incentives or appropriations. The allowance distribution formula can solve this problem, by incentivizing firms to invest in rapid deployment of these key technologies.

We propose to dedicate at least 25 percent of total allowances to incentivize technology deployment and R&D. Although not an exclusive list, the prime candidate “big change” technologies include:

- *Coal gasification and carbon capture in the electric sector.* IGCC with CCS appears to meet every test of technological feasibility. CCS is essential to maintaining a vibrant market for coal under a long-term declining cap. Large-scale implementation of IGCC/CCS in this country would open the door to its application in China and India as well – a key to sustaining development in those nations without unacceptable carbon emissions. Despite these factors, investment in IGCC/CCS is currently limited by two factors. First, many electric generators that see the attractiveness of this technology are waiting for others to undertake the first projects. Second, beyond initial applications associated with enhanced oil recovery, there is a cost differential (compared to conventional coal plants) that is unlikely to be covered by initial allowance prices.

During this period, incentives in the form of allowance allocations can accelerate the deployment of these IGCC/CCS plants in meaningful numbers. As indicated above, these incentives should be structured as a performance standard – a low-carbon emissions standard for coal-based energy – in order to allow other potential coal-using technologies to compete with IGCC/CCS on an open basis.

- *Retooling the automobile.* A wide range of improved drive-train (including hybrid gas-electric engines) and related technologies (such as HFC-free air conditioners) are available to dramatically reduce global warming pollution from passenger vehicles and, by extension, many other segments of the transportation sector. The California Air Resources Board's global warming emission standards, for example, will reduce per-vehicle emissions by nearly 30 percent by 2016, making broader use of improved drive-train and other technologies that are already in use in some models. Achieving the California standards does not depend on hybrid gas-electric vehicles, although obviously they count towards compliance. Much greater reductions can be achieved after 2016 if hybrid or other advanced fuel efficient technologies are fully deployed across the fleet.

Incentivizing domestic production of hybrids and other technologies would assist domestic auto companies in becoming more competitive. An allowance allocation to automakers (and suppliers) tied to the global warming emissions performance of manufacturers' fleets would help incentivize and smooth the transition to building advanced, clean technologies.

- *Renewable energy.* A third “big change” technology is renewable energy. The deployment of cellulosic biofuels has great potential as a replacement for petroleum-derived fuels. Allowance allocations could help mainstream construction of plants to convert cellulosic materials into both transportation fuels and electricity, and could help farmers accelerate the supply of cellulosic feedstocks. In addition to reducing global warming pollution, an

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allowance allocation for this purpose would help achieve the president's objective of ending our oil addiction. It would also help the farm sector adjust to agricultural subsidy reforms required by our WTO commitments and our budget deficits.

Other renewable energy resources, such as wind and solar, should also be supported. While wind power is competitive in many markets wind still provides only a tiny fraction of U.S. electricity and the on-again-off-again nature of the production tax credit inhibits the large scale investment in wind that is needed for it to achieve its potential. A more stable funding incentive would markedly increase wind generation's penetration. Off-shore wind is a particularly promising technology for serving a significant share of the electricity load along the East Coast, yet there are no operating off-shore wind facilities in the United States. The global market for solar power is growing rapidly but large investments are needed in solar panel manufacturing to bring down costs to make this technology competitive in on-grid applications.

As noted above, wherever possible these incentives should be stated in performance terms (such as emissions per megawatt/hour) and implemented through efficient mechanisms (such as a reverse-auction based on energy savings or energy production per allowance awarded or dollar invested). However, there are good reasons to segregate or target certain incentives rather than to have one overall competitive pool of incentives. First, there are key areas where targeting is appropriate – for example, there is a compelling need for low-emitting means of using our coal resources. So legislation should target some of these specific areas for at least an initial period.

Institutionally, as indicated above, we support implementing these incentives partly by allocation formulas written into the statute, and partly by allocating allowances to a publicly chartered entity. The Climate Change Credit Corporation proposed under the Climate Stewardship Act is one example. The entity would allocate allowances according to specific criteria provided by statute, through a mix of performance based allocations, reverse auctions, and other means. The entity would have to have a balanced board of directors representing public voices as well as private sector voices. The entity would have to operate transparently according to rulemaking procedures. But because it would be vested with allowances by law, it would not be subject to annual appropriations.

A portion of these technology-advancement allowances – perhaps five percent of total allowances – should be dedicated to RD&D into breakthrough technologies that are not yet ready for broad deployment assistance. This amount would be sufficient to reverse the dangerous decline in RD&D budgets that has occurred over the past decade and a half. A high priority should be given to joint ventures with the private sector putting up half of the research funds. This will help assure that the research is well targeted. In order to replenish the funding for further RD&D, the statute should provide that the publicly chartered entity will receive an equal share in the patent rights for successful technologies developed with these public funds.

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Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2b:

Adaptation Assistance

- What portion of the overall allowance pool should be dedicated to adaptation research or adaptation-related activities?
- How should these allowances or funds be administered?
- What is the appropriate division between federal vs. regional, state, and local initiatives?

We support allocating five percent of total allowances for helping communities heavily affected by climate impacts. Examples activities include (but are not limited to) Gulf Coast wetland restoration and Alaskan village relocation). Adaptation allowances also could be used to assist workers and communities that are disproportionately impacted by mitigation measures (e.g., coal-miners and coal-mining communities).

Question 2. Allocation

Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2c:

Consumer Protections

- What portion of the overall allocation pool should be reserved to assist consumers?
- Should funds from the sale of permits or allowances be targeted primarily to low-income consumers, or should they be more widely distributed to benefit all consumers?

At least half of total allowances should be allocated for the benefit of consumers.

In response to question 2f we offer a specific proposal to assist electricity consumers by giving allowances to distribution companies with directions to use the value of those allowances to support end-use efficiency investments and as rebates to assist consumers (especially low-income consumers) adjust to energy price impacts.

The same proposal can be applied to the natural gas sector (other than gas consumed in electric power generation) by giving the allowances to regulated distribution companies with the same conditions for supporting end-use efficiency investments and consumer rebates.

In the oil sector, there is no rate-regulated distribution sector. The solution here is to allocate at least half the allowances related to oil to the public entity (e.g., the CCCC) that serves as the public's trustee, with instructions to use the value of those allowances to support consumer incentives to purchase lower-emitting vehicles, to support other emission-reducing strategies (e.g., public transportation, "smart growth" development patterns), and to assist low-income oil consumers.

Similarly, we recommend allocating at least half the allowances related to the industrial greenhouse gases (such as HFCs) to the public trustee entity with similar instructions. As an example, one opportunity would be to help pay for measures to reduce HFC leakage in key end uses, such as automobile air conditioners.

Question 2. Allocation

Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2d:

Set-Aside Programs

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

Five percent of total allowances should be set aside to encourage emission reduction and sequestration activities by sources that are not covered by the cap, such as soil carbon sequestration by farmers and methane capture at small landfills not covered by EPA regulations. NRDC strongly supports the proposal in the White Paper to use allowances from within the programs overall emissions budget for this purpose rather than to create additional “offset” allowances based on these activities. Establishing appropriate emissions baselines for non-covered sources is an inherently uncertain exercise because it is impossible to observe the emissions that would occur from these sources in the absence of the program. Using allowances from within the cap is a good way to create incentives for beneficial activities without risking the environmental integrity of the emissions cap.

NRDC does not support providing allowances as credit for activities solely on the basis of them being reported as emission “reduction” under DOE’s 1605b program. Early emission reductions are their own reward because they position firms to comply with the cap at the lowest possible cost. (This would not be true only if allowances were allocated based on historical emissions from a year after the emission reduction activity occurred. NRDC opposes such an allocation system for numerous reasons described above). Comments during the development of the 1605b program reporting guidelines explicitly argued that DOE should not require the rigorous reporting rules that would be needed for a crediting program, in order to encourage “broad participation” the program. Indeed, a careful review of the emission “reductions” reported under the 1605b program clearly shows that most of the reported activities, such as increased output at existing nuclear power plants, were business-as-usual business decisions that had nothing to do with the prospects of greenhouse gas regulations, and thus deserve no rewards now.¹³

¹³ See <http://www.nrdc.org/globalwarming/fmandatory.asp>

Question 2. Allocation

Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2e:

Special considerations for fossil-fuel producers?

- Would some upstream fossil fuel producers be unable to pass the cost of purchasing permits or allowances through in fuel prices if they are the regulated entity?
- Is there a sufficient policy rationale for addressing these costs to justify the complexity of setting up and administering an allocation system for these entities?
- What other options exist to address the inability of fossil fuel producers to pass through these costs?

See our introductory comments under Question 2 relating to claims for compensation.

Question 2. Allocation

Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2f:

Allocations for downstream electric generators?

- Should electricity generators be included in the allocation if they are not regulated? (Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)
- What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?
- Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?
- How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?

The decision about allowance allocations is fundamentally a distributional issue and is independent of the point of regulation. The electricity industry merits special consideration in the allocation system both because this industry is responsible for the largest share of U.S. emissions and because of the unique regulatory structures under which it operates. In order to ensure that allowances are used to reduce costs for customers and do not create windfall profits for power plant owners, it is necessary to consider the regulatory treatment of allowances in different regions.

Most of the electricity used in the United States (and an even greater portion of the global warming emissions from the electric sector) is generated by companies operating under cost-of-service regulation, although a significant portion is generated and sold into competitive markets. The allocation system needs to be both workable and equitable regardless of regulatory status, and it needs also to be structured to adapt dynamically to changes in state rate regulatory regimes (i.e., as states transition from regulated to deregulated status, or vice-versa).

Some generators subject to cost-of-service regulation are advocating allowance allocation without cost, arguing that this will hold down rates to their electricity customers. They argue that if allowances are allocated without cost, generators will not be able to reflect the allowances market value in rate increases to customers, because rate regulators will not approve increases for zero-cost allowances. But there is no guarantee that regulators will do this. The allowances still have an opportunity cost (since the generators could sell them) and disallowing pass-through may prompt the utility to make uneconomic decisions regarding whether to generate or purchase power to serve its customers. And the regulators cannot prevent the pass-through of allowance costs for power that utilities purchase from unregulated generators, or power that generators sell into competitive wholesale markets.

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In competitive electricity markets, where electricity rates are set by marginal costs, there is no question that customers would see electricity rate increases that reflect the market value of allowances, regardless of whether they were initially paid for or allocated without cost. In that case, allocation without cost leads to a windfall for the generators.

There are a number of problems with developing two sets of allocation rules based on this distinction. First, the distinction is not clean and simple. Even in cost-of-service markets, state rate regulations and practices differ in important details. As a result, regulators can be expected to vary in their treatment of freely-allocated allowances. Second, as already mentioned, state rate regulation continues to be in transition. Some states are moving towards competition; others back towards some forms of regulation. The allowance allocation formula needs to be dynamic in adjusting to these changes. Third, these markets overlap. Vertically integrated utilities that operate under cost-of-service regulation frequently buy and sell power in competitive wholesale markets.

One solution would be to allocate allowances to electricity *distribution* companies on behalf of their customers (load-serving entities), rather than generators. Under this approach, the portion of allowances that are freely allocated to the electricity sector would be allocated in proportion to some combination of the distribution company's number of customers and electricity sales using a methodology designed in a way that would not penalize utilities that have already made substantial investments in energy efficiency. The allocation should also be updated periodically in order to avoid penalizing utilities that operate in areas where the economy is growing or providing windfalls to those operating in areas of economic decline. But the updating methodology should not penalize utilities that successfully reduce demand for electricity by helping their customers improve energy efficiency.

In markets with cost-of-service regulation, the distribution company and the electricity generator are generally the same entity but, for the reasons stated above and in the discussion of windfall profits in the overview response, it makes an enormous difference if the allocation goes to the distribution company on behalf of its customers rather than to the generator on behalf of its shareholders.

Distribution companies are regulated even in markets with competitive generation. In these areas, allocating the no-cost fraction of allowances to the distribution companies instead of the generators helps protect electricity customers. The legislation should direct distribution companies to use the value of the allowances they receive to reduce the cost of the program for customers in the most cost-effective way possible, by supporting energy efficiency programs, providing additional assistance to low income customers, and returning value directly to all customers through lower distribution charges.

Allocating to distribution companies would be effective regardless of the point of regulation. For example, in an upstream system fossil fuel producers would be required to obtain allowances from distribution companies. In this case the cost of these allowances would be rolled into fuel prices, higher fuel prices would raise generation costs, but most of these increased costs would be compensated by the revenue that the distribution company obtained by selling allowances to

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the fuel producers. The incentive to reduce emissions would be retained because the costs of the most carbon intensive fuels would increase the most, encouraging more efficient generation and a switch to cleaner fuels. Electricity generators should be able to earn allowances by capturing CO₂ and permanently disposing of it in geologic reservoirs.

In a midstream system electricity generators would be required to obtain allowances from distribution companies. In many cases this will be the same entity. In other cases the cost of allowances will raise the marginal cost of generation but customers will again be largely compensated by the revenue that the distribution company obtained by selling allowances to the generator. In this case the generators have a direct incentive to reduce emissions to reduce the number of allowances they need to obtain.

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Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2g:

Allocations for energy-intensive industries?

- Is there a sufficient policy rationale to have an allocation to selected energy-intensive industries? What industries should be included in the allocation?
- What portion of the overall allocation framework should be reserved for these industries?
- What are the appropriate metrics for determining allocations across different industries?

Energy-intensive electricity consumers would benefit from investments in energy efficiency by electricity distribution companies under the proposals made under 2f. Similar arrangements could be developed to support efficiency investments by intensive natural gas users. Energy intensive industries could also benefit from allowance allocations made to support big-change technologies under 2a (remembering that the list of specific technologies set forth there was not intended to be exclusive).

Question 2. Allocation

Submitter's Name/Affiliation: **David Doniger, Natural Resources Defense Council**

Clarifying Questions 2h:

Allocations to other industries/entities?

- What other industries/entities (e.g. agriculture, small businesses, etc.) should be considered in the allocation pool?
- What should be the basis for their share of the total allocation as well as for the distribution among such industries/entities?

Small businesses, farmers, and others would benefit as energy consumers from the proposals we have made above regarding allocations to support energy efficiency investments, and for certain rate rebates.

National Rural Electric Cooperatives

Submitter's Name/Affiliation: Whitman/NRECA

Contact: Carol Whitman

Email: carol.whitman@nreca.coop

Phone: (703) 907-5790

NRECA appreciates the opportunity to comment on the Domenici-Bingaman White Paper, "Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System."

Electric cooperatives are very concerned about proposals that lead to higher energy costs for consumers in the effort to address the climate change issue. As not-for-profit businesses, electric cooperatives must pass through all costs to their consumer members—predominantly families, farms, and small businesses. More than 75 percent of electric cooperatives' generation is coal-based, making cooperatives more dependent on coal than any other segment of the electric power industry. Since coal is the most carbon-intensive fossil fuel, businesses heavily invested in coal will bear a relatively greater burden of increased fuel prices under a mandatory climate policy than those using less carbon-intensive fuels. Cooperatives oppose climate proposals that will increase energy costs for Americans.

NRECA strongly supports the technology-based program included in the Energy Policy Act of 2005, and believes that program must be fully funded and implemented.

If the Congress decides to develop climate change policies that go beyond the provisions included in the Energy Policy Act of 2005, NRECA believes such policies must also be sound energy, security, and economic policies. They must support abundant, reliable, affordable energy for all Americans, including the nation's rural electric consumers. They must be equitable and cost-effective, and not unfairly discriminate against electric cooperatives or electric cooperative consumers. NRECA recommends that any potential future US climate policy must be:

- Flexible and comprehensive, involving all sectors of the economy, all greenhouse gases, sources and sinks. This will lower overall costs compared to a sector-specific program and is necessary if we are to make meaningful contributions to reducing the nation's greenhouse gas emission intensity.
- Equitable and low-cost, balancing the interests of small entities with large ones and equally distributing the burden of any increased fuel costs among all segments of the electric utility industry and the economy. Electric cooperatives, their consumer members, and rural businesses should not pay a disproportionate share for the nation's climate policy.
- Technology-based, with a sustained national commitment to energy and climate technology research, development, demonstration, and deployment. Policies that encourage the acceleration of and investment in the development of new climate technologies and provide incentives for their early deployment should be the basis of US climate policy.
- Global, like the climate change issue itself, lowering mitigation costs and facilitating sustainable international development and technology-based international partnerships. These types of activity will put less developed countries on more environmentally sustainable development paths, ultimately providing the resources necessary to address climate change.

Question 1. Point of Regulation

Submitter's Name/Affiliation: (Whitman/NRECA)

Who is regulated and where?

In designing a policy to address climate change, it is important to recognize its fundamental difference from other environmental problems that we have faced: in addition to its global nature, energy use is the central issue. Carbon dioxide (CO₂), the major greenhouse gas, comes from the burning of fossil fuels—coal, oil, natural gas. As illustrated in the EIA flow chart of greenhouse gas emissions, these fuels are the basis of our entire economy. They heat and light our homes, schools, and offices. They power our cars, electric generation, and industries. And they are the feedstocks for our chemicals and materials. Our physical infrastructure is built around them. Eighty six percent of the energy we consume in the US is fossil fuel. Today, fossil fuels touch almost every part of our lives. And all Americans contribute to US greenhouse gas emissions through their daily activities. It is why this issue is so difficult to address. Ultimately, it will take an investment of enormous proportions to replace fossil fuels. It will take a fundamental change in the global economy. It will take contributions from everyone.

A successful US climate policy must also be a successful energy security and economic policy. NRECA believes that the goal is abundant, reliable, affordable energy for all Americans. Mitigation programs must not jeopardize the continued availability, affordability, and reliability of electric generation to the nation's rural electric consumers. Climate policy should not unfairly discriminate against electric cooperatives or electric cooperative consumers. The path to a low carbon intensity energy future should be least-cost and we must recognize that it will take decades to achieve.

Question 1. Point of Regulation

Submitter's Name/Affiliation: (Whitman/NRECA)

Clarifying Question 1a:

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

An effective climate policy should address all sectors, all greenhouse gases, sources and sinks. Energy use touches every part of our lives and it is the foundation of our high standard of living. There are no simple ways to reduce the nation's demand for energy in the near to mid-term and the consequent greenhouse gas emissions. A flexible, comprehensive approach involving all sectors of the economy will lower overall costs compared to a sector-specific program. An economy-wide approach is also necessary if we are to make meaningful contributions to reducing the nation's greenhouse gas emission intensity.

The US electric utility sector has made great progress in reducing its carbon intensity through energy efficiency gains, the increased use of low-carbon emitting technologies, and other activities. In 2004, the electric power sector reported nearly 180 million metric tons of direct greenhouse gas reductions, 63 percent of all direct reductions reported under section 1605(b) of the Energy Policy Act of 1992. Other sectors of the economy should be encouraged to join these efforts to improve the nation's carbon intensity.

Question 1. Point of Regulation

Submitter's Name/Affiliation: (Whitman/NRECA)

Clarifying Question 1b:

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

US climate policy should be low-cost, favoring end-use consumers that already are struggling to pay high energy bills. It should be equitable, balancing the interests of small entities with large ones.

As outlined in the white paper, upstream systems simplify program administration and reduce administrative costs. They also more efficiently capture all sectors, all greenhouse gases, sources and sinks, lowering overall costs compared to sector-specific programs. However, upstream systems leave allowances in the hands of very few entities, enhancing the possibility that those systems could be gamed and favoring large, downstream emitters.

Rural electric cooperatives, as small businesses and at-cost service providers, need a system that is as simple as possible and with minimal transaction costs. The system must also address the needs of those whom electric cooperatives serve—families, farms, and small businesses—to enable them to compete effectively. Rural electric cooperatives continue to study this issue.

Question 2. Allocation

Submitter's Name/Affiliation: (Whitman/NRECA)

Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?

If the Congress decides to adopt a cap on greenhouse gas emissions with allowances, then those allowances should be allocated without cost. This is an equitable and cost-effective manner of distributing allowances, particularly to the electric power industry that generates electricity and greenhouse gas emissions in response to the demands of communities and businesses. It is particularly important for electric cooperatives that are not-for-profit businesses and must pass through all additional costs to their consumer members.

The auction of allowances is nothing more than a hidden tax. And contrary to the assertion that an auction would not result in unintended competitive advantages, there would be a clear advantage to those that can afford to pay more, to larger entities with greater capital resources, and to those with the ability to switch fuels. Electric cooperatives are disadvantaged in all three of these areas since they serve regions with lower household incomes, they are small businesses, and are 75 percent coal-based.

Free allowances support continued fuel diversity, a necessity for US energy and economic security and for rural electric cooperatives and their communities.

Question 2. Allocation

Submitter's Name/Affiliation: (Whitman/NRECA)

Clarifying Questions 2a:

Technology R&D and Incentives

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

The Energy Policy Act of 2005 authorized a broad portfolio of technology research, development, demonstration, and deployment (RDD&D) for diverse energy resources. Fully funded and implemented, these programs are a major step toward developing climate technologies that will be the keystone of US mitigation efforts. They must be fully funded.

The path to a low carbon intensity energy future should be least-cost and will take decades to achieve. It will depend heavily on technology innovation, which must be at its center. NRECA believes that a technology-based, climate policy will cost less in both the short and long terms. Modest reductions in greenhouse gas emissions in the near term followed by sharper reductions as new cost-effective, carbon-efficient technologies become available can achieve the same environmental result as the more expensive alternative¹.

This approach does require a sustained commitment to technology RDD&D. As the Senate Energy and Natural Resources Committee white paper notes, and NRECA concurs, technology development and deployment are the keys to addressing the climate change issue. The Committee focus here is using a mandatory, market-based system to fund the necessary investments in energy RD&D and incentives for early deployment of advanced technologies. NRECA believes there are more economically efficient, less complex, and less burdensome ways to fund RDD&D. We recommend that this should be at the center of any future Senate discussion on global warming.

¹ Wigley, T.M.L., R. Richels, and J.A. Edmonds. 1996. Economic and environmental choices in the stabilization of atmospheric CO₂ concentrations. *Nature* 379: 240-243.

Question 2. Allocation

Submitter's Name/Affiliation: (Whitman/NRECA)

Clarifying Questions 2f:

Allocations for downstream electric generators?

- Should electricity generators be included in the allocation if they are not regulated? (Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)
- What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?
- Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?
- How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?

Electric cooperatives' generation is 75 percent coal-based in contrast to the industry average of 50 percent. This is a result of our proximity to the coal resource, its affordability, and its economic importance to our rural communities. Since coal is the most carbon-intensive fossil fuel, businesses heavily invested in coal will bear a relatively greater burden of increased fuel prices than those using less carbon-intensive fuels. As not-for-profit businesses, electric cooperatives must pass through all those additional costs to their consumer members.

Whether a cap-and-trade program is regulated upstream or downstream of cooperative generation, it will raise energy costs to rural areas that already pay comparatively more for electricity than their urban counterparts due to fewer customers per mile of line and greater line losses due to long distances. Such a program will unfairly discriminate against electric cooperatives and electric cooperative consumers.

NRECA believes that any climate program should be designed to levelize the burden of increased fuel costs among all segments of the electric utility industry, so that electric cooperatives, their consumer-members, and rural businesses do not pay a disproportionate share for the nation's climate change policy.